

*A sourcebook for planning and  
implementing programs for cancer  
prevention and control*



# Acknowledgements

This publication was made possible through the collaborative efforts of:



## Mission Statement

The American Cancer Society is the nationwide, community-based, voluntary health organization dedicated to eliminating cancer as a major health problem by preventing cancer, saving lives, and diminishing suffering from cancer through research, education, advocacy, and service.

### American Cancer Society 2015 Challenge Goals:

- Reduce age-adjusted cancer incidence rates by 25%
- Reduce age-adjusted cancer mortality rates by 50%
- Improve the quality of life for all those touched by cancer

American Cancer Society  
Hawai'i Pacific, Inc.  
2370 Nu'uuanu Avenue  
Honolulu, Hawai'i 96817  
1-800-ACS-2345  
[www.cancer.org](http://www.cancer.org)

Hope. Progress. Answers.



## Mission Statement

The Cancer Research Center of Hawai'i is the only National Cancer Institute (NCI) designated cancer center in Hawai'i and the Pacific. The Center's programs include the Hawai'i Tumor Registry, which is one of 18 NCI/SEER regions nationwide, and the Cancer Information Service, one of 15 regional offices across the country. The mission of the Cancer Research Center is to reduce the burden of cancer through research, education, and service with an emphasis on the unique ethnic, cultural, and environmental characteristics of Hawai'i and the Pacific. The NCI has recently announced its ambitious goals for the country: to eliminate suffering and death from cancer by 2015.

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## Mission Statement

The mission of the Hawai'i Department of Health is to provide leadership to monitor, promote, protect, and enhance the health and environmental well-being of all of Hawai'i's people. This will be accomplished through the core functions of public health: assessment, policy, and assurance.

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**T**he American Cancer Society, the Cancer Research Center of Hawai'i, University of Hawai'i and the Hawai'i Department of Health are pleased to present the first-ever *Hawai'i Cancer Facts & Figures*. This partnership publication was developed to assist healthcare organizations, health professionals, community groups, and others who are working to reduce the cancer burden in Hawai'i. It may also be of interest to policy-makers, advocates, and news organizations who seek detailed, easy-to-read information about the burden of cancer in Hawai'i.

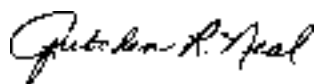
The challenge of cancer is clear. It is the second leading cause of death in the state and nation. Thousands of families in Hawai'i are affected each year. Progress and hope, however, are also evident. For the first time in history, we see a sustained decline in overall age-adjusted cancer mortality rates in the U.S. As for hope, in addition to the striking advances in research and treatment, much can be accomplished at the state level and in local communities to save lives, decrease cancer incidence and mortality rates, and improve the quality of life for all cancer survivors.

Even as we are encouraged by the progress already achieved, we are mindful that much work remains to be done. It will require collaboration of many organizations such as ours along with many community partners and volunteers to achieve this ambitious goal, and to improve the quality of life for all those touched by cancer.

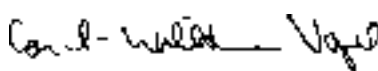
The American Cancer Society, the Cancer Research Center of Hawai'i, the Hawai'i Department of Health, and other partners are committed to reducing the burden of cancer in our state. Providing accurate, unbiased information is a critical responsibility. We are therefore pleased that *Hawai'i Cancer Facts & Figures* affirms the spirit of collaboration between our organizations.

This document, created by public health officials and partners, is primarily intended to serve the public. We hope you find *Hawai'i Cancer Facts & Figures* a useful tool in planning and implementing collaborative programs aimed at reducing the burden of cancer in Hawai'i.

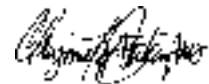
Sincerely,



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# Cancer in Hawai'i: An Overview

## What Is Cancer?

Cancer is a large group of diseases characterized by uncontrolled growth and spread of abnormal cells. If the spread is not controlled, it can result in death. Cancer can be caused by external (chemicals, tobacco smoke, radiation, viruses), internal (hormones, immune conditions, genetics), and lifestyle (tobacco and alcohol use, unprotected sun exposure, poor nutrition, physical inactivity) factors (Table 1). Many cancers can be cured if detected and treated promptly, and many others can be prevented by lifestyle changes, especially avoidance of tobacco.

## How Many New Cases Are Expected to Occur This Year?

It is estimated that close to 1.3 million people in the United States will be diagnosed with cancer in 2003. In Hawai'i, approximately 5,000 men and women are diagnosed each year with the disease. This means that in a typical week, nearly 100 Hawai'i residents learn from their physicians that they have invasive cancer. Over the last 26 years, trends in cancer incidence and mortality, provided by the Hawai'i Tumor Registry of the Cancer Research Center of Hawai'i, reveal an increase in the actual number of new cancer cases and deaths (counts), but a decline in the age-adjusted mortality rates per 100,000 population (Figure 1, Figure 2). See page 8 for a description of cancer rates.

## Who Gets Cancer?

Cancer may strike at any age. However, most cancers affect adults beginning in middle age and occur more frequently with advancing age. There are differences in the incidence of cancer by both gender as well as race/ethnicity. As is true for the United States as a whole, four cancer sites account for more than half of Hawai'i's cancer burden. These include lung and bronchus, colon and rectum, breast (female), and prostate cancers. The most common types of cancer for men

in Hawai'i include prostate (27%), lung (15%), and colon and rectum (14%). In women, breast cancer (34%) occurs most frequently, followed by colon and rectum (12%), and lung (10%). Each year, these sites together account for approximately 2,800 new cases of cancer diagnosed and 800 cancer deaths in Hawai'i residents (Figure 3). Leukemias are the leading malignancies among children. An overview of the average annual number of new cases (incidence) and deaths (mortality) for standard cancer sites is provided in Table 2.

## How Many Lives Will Be Lost to Cancer?

The challenge of cancer is clear. Over a six-year period in Hawai'i (1995-2000), close to 5,900 males and 4,500 females died of cancer. On average, close to 1,700 Hawai'i residents die each year of the disease. Stated another way, cancer accounts for roughly one of every five deaths in the state each year. It is second only to heart disease as the leading cause of all deaths in Hawai'i. Nationwide, among Asian American and Pacific Islander females, cancer has been the leading cause of death since 1980. Among adults ages 25-64, cancer was the leading cause of death in Hawai'i in 2001. Among children ages 5-14, cancer was the second leading cause of death, following accidental death, in the six year time period 1995-2000. However, fewer than one percent of all cancers occur among children less than 15 years of age.

Progress and hope, however, also are evident. Overall age-adjusted cancer mortality rates in Hawai'i and in the U.S. as a whole have continued to decline over the last decade. In addition to the striking advances in research and treatment, much can still be accomplished at the state level and in local communities to save lives, decrease cancer rates, and improve the quality of life for all cancer survivors.

## Could More People be Saved?

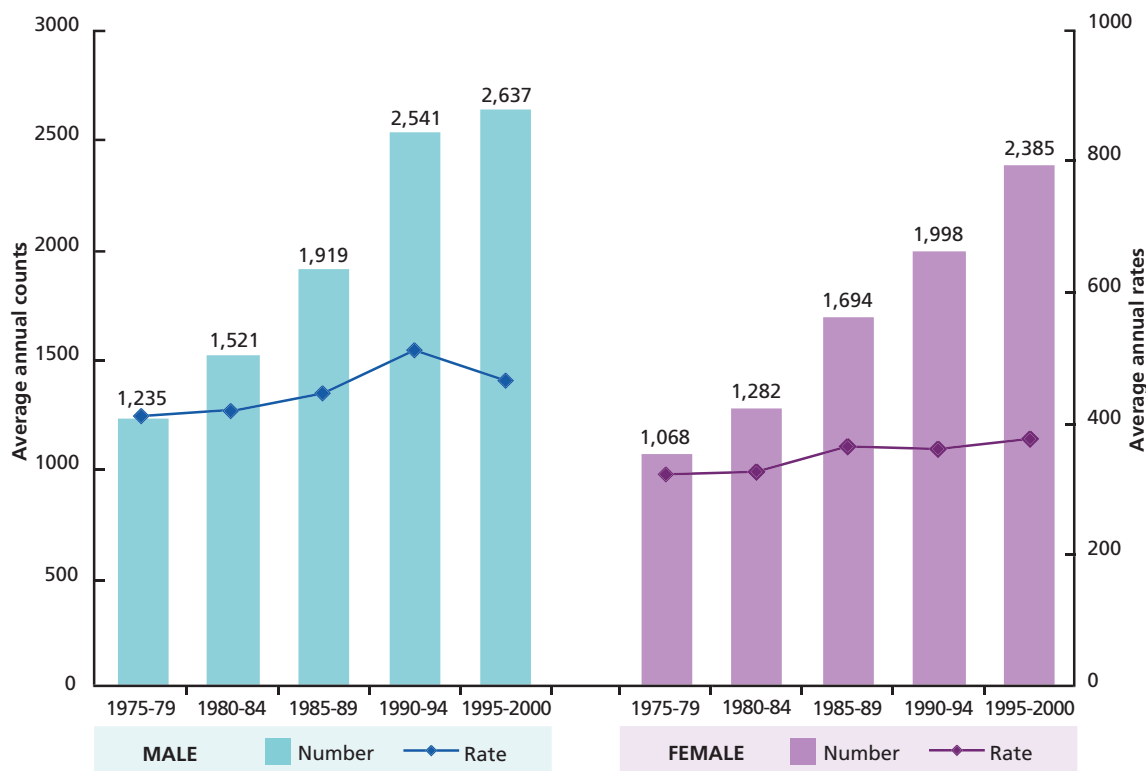
Many cancers can be cured if detected and treated promptly, while others can be controlled for many years with appropriate treatment. In addition, many cancers can be prevented by lifestyle changes. All cancers caused by cigarette smoking and heavy use of alcohol can be prevented completely. Of the more than 10,300 lives lost to cancer in Hawai'i between 1995 and 2000, it is estimated that close to 3,100 (30 percent of total) were lost because of tobacco use. About 300 (3 percent of total) cancer deaths may be related to excessive alcohol use, frequently in combination with tobacco use. Scientific evidence suggests that it may be possible to reduce cancer deaths by up to one-third by improving nutrition and maintaining a body weight within the recommended range. Many of the new cases of and deaths from colon and rectum cancers are preventable by such improvements in nutrition and physical activity and by timely use of existing colorectal cancer screening tests. In addition, nearly all cervical and skin cancers can be prevented and/or diagnosed at a very early stage when the disease is most curable.

**Table 1. Estimate of the Proportion of Cancer Deaths Attributed to Various Factors**

Factor	Doll & Peto Estimate (%)	Miller Estimate (%)
Tobacco	30	29
Diet	35	20
Alcohol	3	6
Occupation	4	9
Family history	—	8
Reproductive & Sexual history	7	7
Geophysical	3	1
Pollution	2	—
Medication & Medical Procedures	1	—
Industrial & Consumer Products	1	—
Infective Processes	10	—

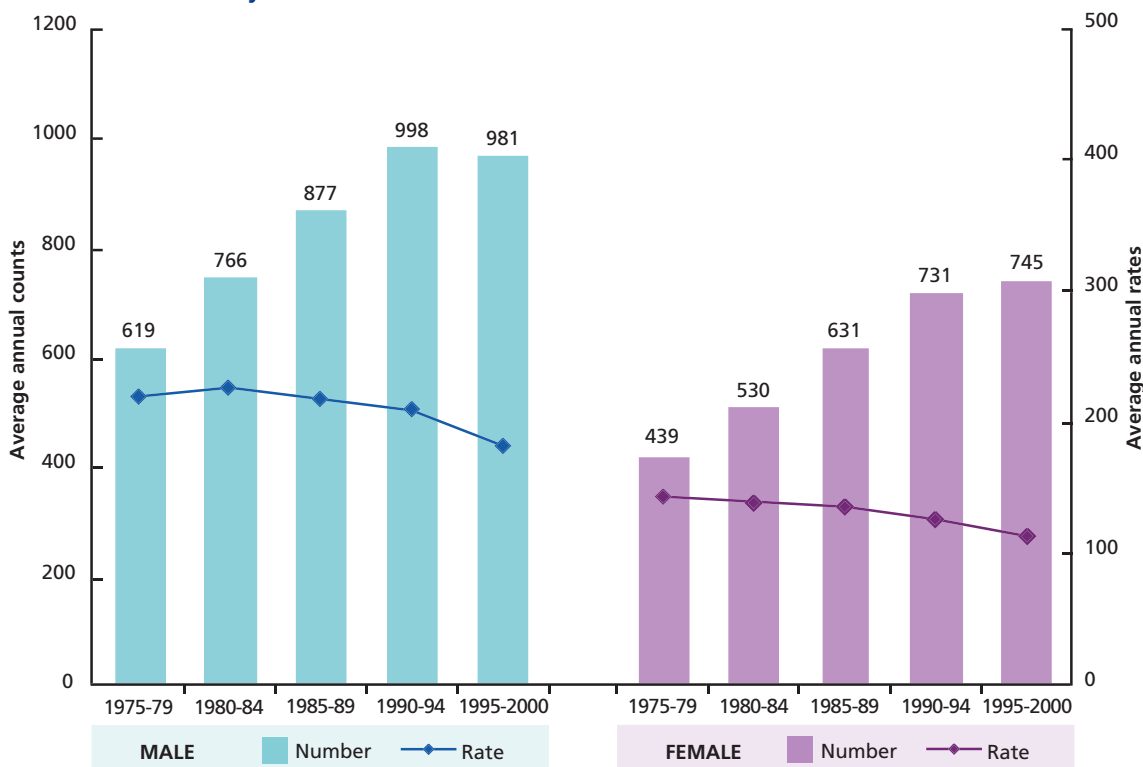
Source: Doll, R. and Peto, R. (1981). The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today. *Journal of the National Cancer Institute*, 66:1193-1308.

**Figure 1. Trends in Cancer Incidence Counts and Rates, All Cancers, Hawai'i, 1975-2000**



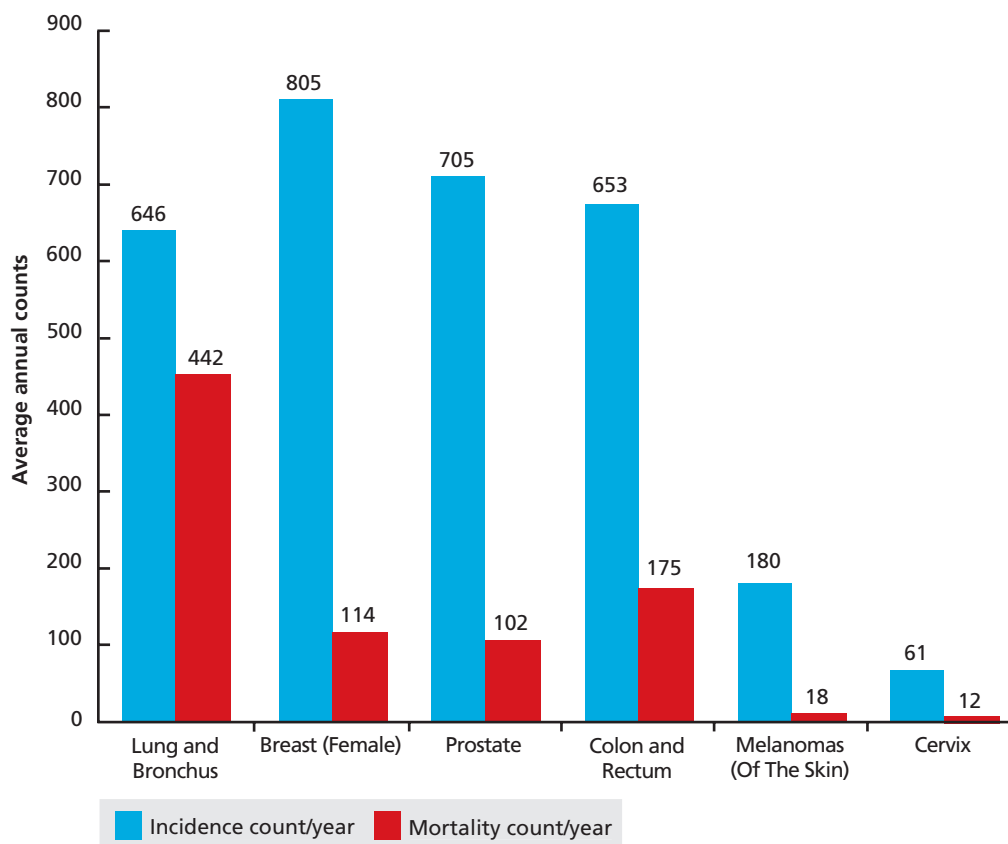
Invasive cases; Counts are average annual per time period, rounded to the nearest whole.  
Rates are average annual per 100,000 population and are age-adjusted to the 2000 U.S. standard population.  
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 2. Trends in Cancer Mortality Counts and Rates, All Cancers, Hawai'i, 1975-2000**



Counts are average annual per time period, rounded to the nearest whole.  
Rates are average annual per 100,000 population and are age-adjusted to the 2000 U.S. standard population.  
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 3. Average Annual Incidence and Mortality Counts for Selected Cancers. Hawai'i, 1995-2000**



Invasive Cases; Counts are 6 year average annual, rounded to the nearest whole.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

### The Economic Cost of Cancer

Cancer is the most costly illness in the United States. The National Institutes of Health estimate that, nationwide, the direct and indirect economic costs for cancer in 2003 were \$189.5 billion. That's billion! (NIH, National Heart Lung & Blood Institute, 2002 Fact Book. <http://www.nhlbi.nih.gov/about/02factbka.pdf>)

In Hawai'i, the Hawai'i Health Information Corporation reported that, statewide, inpatient hospital charges for cancer care exceeded \$230 million in 2001, with an estimated total cost of cancer care in Hawai'i of around \$500 million each year (Honolulu Advertiser. <http://the.honoluluadvertiser.com>, June 1, 2003).

To reduce the tremendous economic burden and human suffering caused by cancer, we must work together to promote and provide prevention activities, appropriate cancer screening and detection efforts, and comprehensive patient services and quality of life programs that help all individuals triumph physically and mentally against cancer.





**Table 2. Average Annual Incidence and Mortality Counts and Rates, All Races/Ethnicities, Hawai'i, 1995-2000**

SITES	INCIDENCE					MORTALITY				
	Male Cases Avg./Year	Male Rate	Female Cases Avg./Year	Female Rate	Total Cases Avg./Year	Male Deaths Avg./Year	Male Rate	Female Deaths Avg./Year	Female Rate	Total Deaths Avg./Year
<b>All Sites</b>	<b>2,637</b>	<b>471.8</b>	<b>2,385</b>	<b>378.8</b>	<b>5,022</b>	<b>981</b>	<b>179.0</b>	<b>745</b>	<b>117.0</b>	<b>1,726</b>
Anus	^ ^	^ ^	5	0.8	7	^ ^	^ ^	^ ^	^ ^	^ ^
Bones and Joints	7	1.2	^ ^	^ ^	10	4	0.7	^ ^	^ ^	7
Brain and Other Nervous System	33	5.8	28	4.6	61	18	3.1	15	2.4	33
Breast	^ ^	^ ^	805	128.3	808	^ ^	^ ^	114	18.1	115
Cervix	–	–	61	10.1	61	–	–	12	1.9	12
Colon and Rectum	374	67.4	279	43.6	653	101	18.3	74	11.6	175
Corpus Uteri, NOS			154	24.7	154	–	–	20	3.2	20
Esophagus	38	6.7	8	1.3	46	29	5.1	7	1.0	36
Eye and Orbit	5	0.8	4	0.7	9	^ ^	^ ^	^ ^	^ ^	^ ^
Gallbladder	5	1.0	8	1.2	13	^ ^	^ ^	4	0.6	7
Hodgkins Disease	11	1.8	8	1.3	19	^ ^	^ ^	^ ^	^ ^	^ ^
Kidney and Renal Pelvis	72	12.7	37	5.8	109	27	4.8	12	1.9	39
Larynx	33	5.9	6	0.9	39	7	1.2	^ ^	^ ^	8
Leukemia	59	10.5	43	7.0	102	36	6.5	28	4.4	64
Liver	70	12.4	34	5.3	104	50	9.0	25	3.9	75
Lung and Bronchus	402	71.8	244	37.6	646	281	50.6	161	24.8	442
Melanomas of the Skin	117	20.5	63	10.3	180	11	1.9	7	1.0	18
Multiple Myeloma	13	2.3	12	1.8	25	15	2.8	11	1.7	26
Non-Hodgkins Lymphoma	97	17.3	79	12.4	176	41	7.5	33	5.2	74
Oral Cavity	100	17.6	47	7.5	147	27	4.8	11	1.7	38
Other Biliary	11	2.1	10	1.6	21	^ ^	^ ^	4	0.6	7
Ovary	–	–	92	14.9	92	–	–	34	5.4	34
Pancreas	74	13.4	68	10.6	142	57	10.5	53	8.2	110
Penis	^ ^	^ ^	–	–	^ ^	^ ^	^ ^	–	–	^ ^
Pleura	8	1.4	^ ^	^ ^	9	^ ^	^ ^	^ ^	^ ^	^ ^
Prostate	705	127.4	–	–	705	102	19.9	–	–	102
Small Intestine	13	2.3	8	1.3	21	^ ^	^ ^	^ ^	^ ^	4
Soft Tissue including Heart	21	3.8	15	2.5	36	7	1.2	6	0.9	13
Stomach	124	22.6	74	11.6	198	67	12.3	42	6.6	109
Testis	30	4.9	–	–	30	^ ^	^ ^	–	–	^ ^
Thyroid	27	4.6	76	12.6	103	^ ^	^ ^	4	0.6	6
Urinary Bladder	66	12.1	20	3.0	86	18	3.4	8	1.3	26
Vagina	–	–	4	0.7	4	–	–	^ ^	^ ^	^ ^
Vulva	–	–	9	1.5	9	–	–	^ ^	^ ^	^ ^
Ill-defined and unspecified	52	9.4	46	7.2	98	52	9.6	41	6.4	93

NOS=Not otherwise specified. Liver includes hepatic bile duct.

Rates are average annual per 100,000 and are age-adjusted to the 2000 U.S. standard population.

Counts are 6 year average annual, rounded to the nearest whole.

^ ^ Counts and rates based on small numbers (< 20 per time period) are suppressed.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

## What are Cancer Incidence and Mortality Rates?

Cancer incidence rates are measures of the risk of being diagnosed with cancer among the state's general population, while mortality rates are measures of the risk of dying among the state's general population. Cancer rates in this document represent the number of new cases of cancer per 100,000 population (incidence) or the number of cancer deaths per 100,000 population (mortality) during a specific time period.

For example, if the state's average annual lung and bronchus cancer incidence rate among males is 70.0, that means for every 100,000 men in Hawai'i, approximately 70 new cases of lung and bronchus cancer are diagnosed each year. If the state's adult male population numbers 500,000, then approximately 350 new cases of lung and bronchus cancer are diagnosed among men in Hawai'i each year (five times the number of cases diagnosed in a 100,000 population):

$$\frac{70 \text{ new cases diagnosed in one year}}{100,000 \text{ population}} = \frac{350 \text{ new cases diagnosed in one year}}{500,000 \text{ population}}$$

A similar example can be used for an area smaller than the state or for specific race/ethnic groups. For example, if a county's adult male population numbers 50,000, then approximately 35 new cases of lung and bronchus cancer are diagnosed among men in the county each year (one-half the number of cases diagnosed in 100,000 population):

$$\frac{70 \text{ new cases diagnosed in one year}}{100,000 \text{ population}} = \frac{35 \text{ new cases diagnosed in one year}}{50,000 \text{ population}}$$

Rates provide a useful way to compare the cancer burden irrespective of the actual population size. Rates can be used to compare demographic groups (males have higher lung cancer rates than females), racial/ethnic groups (Hawaiian females have higher breast cancer rates than other racial/ethnic groups), or geographic areas (Hawai'i has lower lung cancer mortality rates than California).

Mortality rates depend both on the stage at diagnosis, survival rates, and treatment modalities for the cancer type. Mortality rates do not reflect the risk of death among newly diagnosed cancer cases. Persons dying of cancer today were probably diagnosed several years ago. Therefore, a new screening program may result in a greater number of new cancers being diagnosed (i.e. higher incidence rates). However, the new screening program, aimed at early detection and increased survival, will take time to influence the mortality rates.

## What are Age-adjusted Rates?

The cancer risk of people at older ages is generally higher than people at younger ages. For example, about 3 of every 4 cancer cases diagnosed in Hawai'i occur in people age 55 and older. As a result, if one geographic area's cancer incidence rate is higher than another, the first question asked is whether the county with a higher rate has an older population.

To address this issue, all mortality and incidence rates presented in this booklet have been "age-adjusted." This removes the impact of different age distributions between populations and allows for a direct comparison of those populations. Age-adjustment also allows for a comparison of rates within a single population over time. An age-adjusted rate is not a real measure of the burden of the disease on a population, but rather an artificial measure that is used for comparison purposes.

## Age-adjusting to the 2000 United States Standard Population

All mortality and incidence rates in this publication, provided by the Hawai'i Tumor Registry at the Cancer Research Center of Hawai'i, were age-adjusted using the direct method. The direct standardization method weights the age-specific rates for a given gender, race, or geographic area by the age distribution of the standard population.

*Hawai'i Cancer Facts & Figures 2003-2004* uses the 2000 United States standard million population (2000 U.S. standard population) for age-adjusting data. The purpose of shifting to the 2000 U.S. standard population is to more accurately reflect contemporary incidence and mortality rates, given the aging of the U.S. population. On average, Americans are living longer because of the decline in infectious and cardiovascular diseases. Our longer life span is allowing us to reach the age where cancer and other chronic diseases become more common. Using the 2000 U.S. standard for age adjustment instead of the 1970 or 1940 U.S. standards allows age-adjusted rates to be closer to the actual, unadjusted rate in the population. Rates adjusted to the 2000 U.S. standard population will be higher than those adjusted to the 1970 U.S. standard or the world standard population because weighting is higher for older ages with the new standard.

Data comparisons should be limited to data adjusted to the same standard populations. Comparisons to previous years' publications (e.g. *Hawai'i Facts & Figures At A Glance Brochure, 2001*) should be avoided because age adjustments in previous publications used the 1970 U.S. standard population. In addition, comparisons to publications using the world standard population should be avoided. Comparisons of data age-adjusted according to different standards would lead to erroneous conclusions.

The *Cancer Facts & Figures 2003*, released in January 2003 by the National Home Office of the American Cancer Society, uses the 2000 U.S. standard population for age-adjustment, so age-adjusted incidence and mortality rates from that publication can be compared to the *Hawai'i Cancer Facts & Figures 2003-2004*.

# Survival by Stage of Disease at Diagnosis

In the early 1900's, few cancer patients had any hope of long-term survival. In the 1930's, fewer than one in five was alive at least five years after treatment. In the 1940's it was one in four, and in the 1960's it was one in three. Today, when normal life expectancy is taken into consideration (factors such as dying of heart disease, accidents, and diseases of old age), a "relative five-year survival" of 62 percent is seen for all cancers combined.

One of the strongest predictors of survival is the degree to which the cancer has spread when discovered, referred to as the stage at diagnosis. Cancer staging, based on a summary classification developed by the National Cancer Institute's Surveillance, Epidemiology and End Results (SEER) program, refers to the extent of disease categorized as in situ, localized, regional, and distant (see definitions next page). Among Hawai'i residents, the number of invasive cancers diagnosed at early stage (localized) differ between racial/ethnic groups (Table 3). Generally, the earlier the stage, the better the chance of survival (Table 4). We have made significant progress in helping individuals survive cancer through prevention, early detection, and treatment. However, we still have a long way to go. Following the American Cancer Society's guidelines for cancer prevention and early detection could help save many lives lost to cancer.



**Table 3. Total Number of Cases and Percent of Total by Stage at Diagnosis by Race/Ethnicity, Invasive Cancers, Selected Sites, Hawai'i 1995-2000**

SITE	CAUCASIAN				CHINESE				FILIPINO			
	Total Cases	% Early Staged	% Late Staged	% Un-Staged	Total Cases	% Early Staged	% Late Staged	% Un-Staged	Total Cases	% Early Staged	% Late Staged	% Un-Staged
Breast (Female)	1,379	68.7	29.4	2.0	297	70.4	29.0	0.7	502	64.1	34.9	1.0
Cervix	88	64.8	34.1	1.1	20	40.0	60.0	0.0	59	39.0	61.0	0.0
Colon and Rectum	928	45.2	50.4	4.4	258	48.8	48.1	3.1	511	43.8	50.5	5.7
Lung and Bronchus	1,154	20.3	73.7	6.1	243	19.8	75.7	4.5	581	18.6	73.8	7.6
Melanoma of the Skin	847	89.8	8.9	1.3	^^	^^	^^	^^	^^	^^	^^	^^
Prostate	1,294	77.6	16.9	5.5	327	79.8	15.9	4.3	704	70.0	24.3	5.7

Number of cases is a six year total. Percentages are based on unrounded totals.

Early = localized; Late = regional and distant. Localized, regional and distant cancers are invasive. In situ cases (non-invasive) are not included.

^^ Statistic not displayed due to fewer than 20 cases in the 6 year time period.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 4. Five-Year Relative Survival (%) by Stage at Diagnosis, United States, 1992-1998**

	All Stages	Localized	Regional	Distant
Breast (Female)	86	97	78	23
Cervix	70	92	49	15
Colon and Rectum	62	90	65	9
Corpus and Uterus	84	96	64	26
Esophagus	13	27	13	2
Kidney	62	90	60	9
Larynx	64	82	51	38
Liver	7	15	6	2
Lung and Bronchus	15	49	22	3
Melanomas of the Skin	89	96	60	14
Oral Cavity	56	82	47	23
Ovary	53	95	81	31
Pancreas	4	17	7	1
Prostate **	97	100	–	34
Stomach	22	59	22	2
Testis	95	99	95	74
Thyroid	96	99	95	44
Urinary Bladder	82	94	48	6

Note: Rates are adjusted for normal life expectancy and are based on cases diagnosed from 1992-1998, followed through 1999.

Percentages are from NCI data and are not specific to Hawai'i survival data. These rates provide some indication about the average survival experience of cancer patients in a given population. They are less useful in predicting individual progress and should be applied with caution.

\*\* The rate for localized stage for prostate cancer represents localized and regional stages combined

Source: National Surveillance, Epidemiology, and End Results (SEER) Program, 1973-1999, Division of Cancer Control and Population Sciences, National Cancer Institute, Bethesda, MD 2001.

## Understanding Cancer Stage of Disease

A cancer's stage is based on the primary tumor's size and whether it has spread to other areas of the body.

***In situ*** - describes a neoplasm that is “non-invasive” and confined to a small circumscribed area within the tissue of origin. The tumors have not invaded or penetrated surrounding tissue. An in situ lesion can only be diagnosed by microscopic examination.

***Localized*** - indicates a neoplasm that has not spread beyond the organ of origin or basement membrane. The tumor may be widely invasive within the organ of origin (primary site) and may even show metastasis within the organ of origin. It can still be considered “localized” as long as there is no extension beyond the outer limits of the primary organ with no evidence of metastasis elsewhere within the body.

***Regional*** - indicates a tumor that has spread to adjacent organs or tissues or to lymph nodes surrounding the primary organ. Remote spread must be reasonably ruled out.

***Distant*** - refers to a neoplasm that has extended to remote areas from the primary tumor by metastasis either through the blood system, distant lymph nodes, or by implantation metastasis.

***Unstaged or Unknown*** - used when there is insufficient information to determine the stage or extent of the disease at diagnosis.

**Table 3, continued**

JAPANESE				NATIVE HAWAIIAN			
Total Cases	% Early Staged	% Late Staged	% Un-Staged	Total Cases	% Early Staged	% Late Staged	% Un-Staged
1,573	76.9	22.4	0.7	769	63.3	35.4	1.0
61	67.2	29.5	3.3	68	57.4	41.2	1.5
1,609	44.0	53.3	2.7	403	39.0	56.8	4.2
978	21.7	72.3	6.0	654	16.7	76.9	6.4
41	85.4	7.3	7.3	24	62.5	33.3	4.2
1,326	77.6	17.6	4.8	352	73.9	21.9	4.3





# The Impact Of Gender, Age, and Race/Ethnicity

Cancer strikes men, women, and children of all ages and races. Although four cancer sites account for the majority of cancer burden among adults in Hawai'i and the U.S., variations in the leading sites are seen due to gender, age, and race/ethnicity differences.

When comparing the overall cancer burden among males and females, men in Hawai'i account for approximately 53 percent of all newly diagnosed cancers in Hawai'i, and have higher overall cancer rates. Women account for approximately 47 percent of new cases of the disease. Prostate cancer is the most commonly diagnosed cancer among all males in Hawai'i, followed by lung and bronchus cancer and colorectal cancers. Breast cancer is the most commonly diagnosed cancer among all females in Hawai'i, followed by colon and rectum (herein after referred to as colorectal) cancers and lung and bronchus cancer (Figure 4). Lung and bronchus cancer is the leading cause of cancer deaths for both men and women in the state, all races combined. The second and third leading causes of cancer deaths among men, all races combined, are prostate and

colorectal cancers. For women, all races combined, the second leading cause of cancer deaths is breast cancer, followed third by colorectal cancers. It is interesting to note that, although the number of breast, prostate, and colorectal cancers diagnosed each year is greater than the number of lung and bronchus cancer cases diagnosed, the total number of lung and bronchus cancer deaths each year exceeds deaths from the other three sites combined.

Incidence and mortality rates (the number per 100,000 population adjusted by age) vary widely by race/ethnicity. When considering all cancer sites combined, the lowest incidence rates are seen among Filipino and Chinese females, while Caucasian males, followed by Filipino males and Hawaiian females have the highest incidence rates. In terms of cancer deaths, Japanese and Filipino females have the lowest mortality rates, while Hawaiian males, followed by Caucasian males and Hawaiian females, have the highest mortality rates for all cancer sites combined (Table 5). Differences by race/ethnicity are also seen for specific cancer sites and will be discussed in subsequent sections.

Age is another factor in the amount and type of cancer seen. Among adults, cancer occurs more frequently with advancing age, and the risk of dying from cancer increases significantly. More than 75 percent of the approximate 5,000 new cases of cancer diagnosed in Hawai'i each year occur in residents aged 55 years and older. The impact of age varies with cancer sites. For example, more than 90 percent of prostate cancers occur at age 55 and above. On the other hand, 35 percent of cervical cancers are diagnosed in women age 55 and older. Childhood cancers (ages 0-14) are grouped according to a different classification scheme and are discussed in the following section.

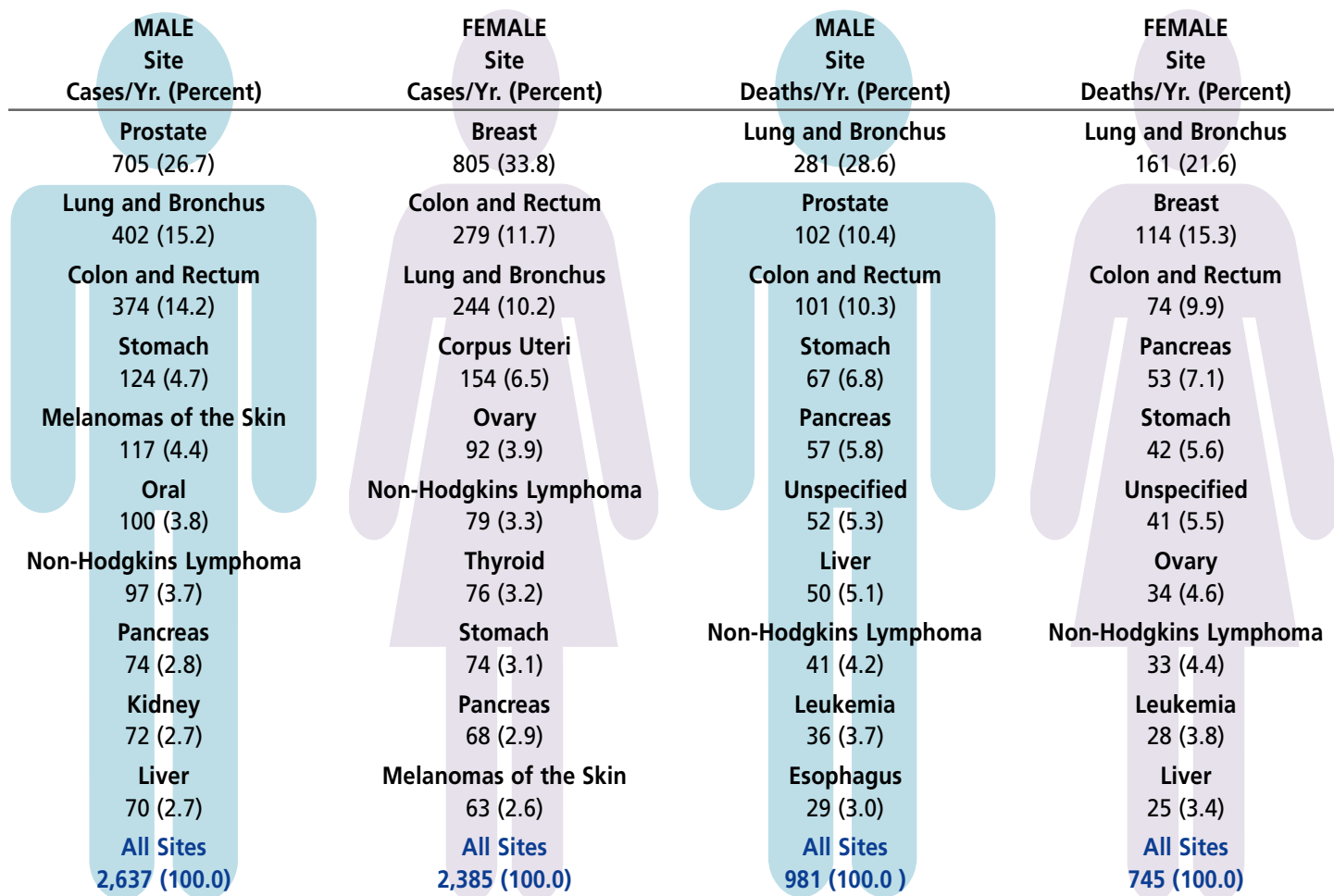


## Definition of Race and Ethnicity

For the purposes of this publication, "race/ethnicity" is used to indicate the combined presentation of race and ethnicity data. The recommendations from the Hawai'i Department of Health (DOH) for collecting, defining, measuring, and reporting race and ethnicity data in the state uses the race categories established by the federal Office of Management and Budget (OMB): American Indian/Alaskan Native, Asian, Black/African American, Native Hawaiian/Other Pacific Islander, and White (termed Caucasian in this publication). The DOH uses the term ethnicity to refer to discreet population groups associated by geography, culture, or language (e.g., Chinese, Japanese, Filipinos, Native Hawaiians) and as aggregates of race categories.

Sorensen, Catherine (2003). Public Health Race and Ethnicity Data: Developing a Common Language, Unpublished manuscript, Hawai'i Department of Health.

**Figure 4. Ten Leading Cancer Sites in Cases and Deaths, Hawai'i, 1995-2000**



Cases and deaths are 6 year average annual, rounded to the nearest whole.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 5 . Average Annual Incidence and Mortality Counts and Rates for All Cancer Sites by Sex and Race/Ethnicity, Hawai'i, 1995-2000**

	INCIDENCE				MORTALITY			
	Male Incidence Count	Male Incidence Rate	Female Incidence Count	Female Incidence Rate	Male Mortality Count	Male Mortality Rate	Female Mortality Count	Female Mortality Rate
Caucasian	830	576.5	672	442.6	272	198.8	203	134.7
Chinese	168	414.6	153	326.7	60	146.2	52	104.1
Filipino	391	476.2	274	318.0	144	175.5	77	95.6
Japanese	780	421.9	728	350.3	300	160.8	218	92.9
Native Hawaiian	300	443.4	359	463.6	144	220.1	137	193.1
<b>Total, All Races</b>	<b>2,637</b>	<b>471.8</b>	<b>2,385</b>	<b>378.8</b>	<b>981</b>	<b>179.0</b>	<b>745</b>	<b>117.0</b>

Note: Counts are 6 year average annual, rounded to the nearest whole. All Races include race/ethnic groups listed plus all other race/ethnic groups combined.

Rates are average annual and are per 100,000 population, age-adjusted to the 2000 U.S. standard population.

All Sites includes all invasive cancers. In-situ cases are excluded.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

# Cancer in Children

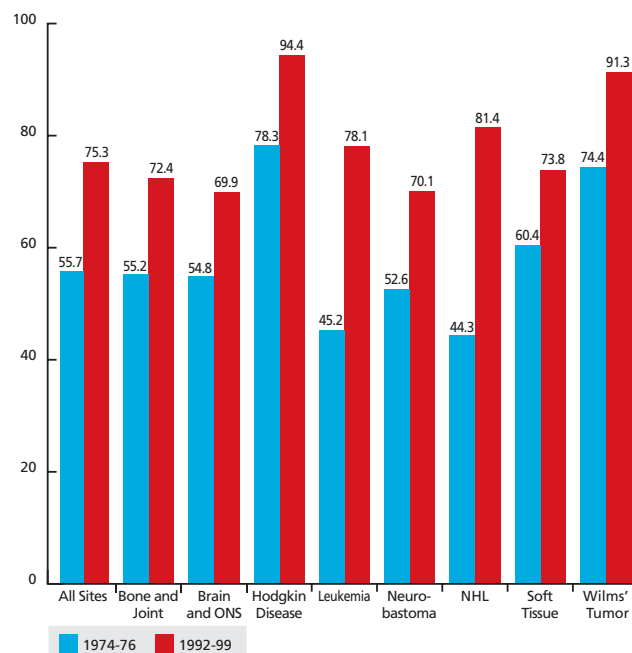
When considering the occurrence of cancer across all age groups, childhood cancer is rare, with less than one percent of all cancers occurring before the age of 15. Although the absolute number of deaths due to cancer in children and adolescents is low relative to adults, the toll in terms of potential years lost is high, and cancer remains the second leading cause of death among children in Hawai'i, ages 1 to 14 years. Between 1985-2000, cancer was diagnosed in more than 800 children and young adults under the age of 20 in Hawai'i (Table 6). During that same time period, approximately 167 cancer deaths were reported among children in Hawai'i, ages 0-14, with another 47 cancer deaths reported in adolescents ages 15 to 19 years.

While cancers among adults are categorized by the anatomical site of the primary tumor, childhood cancers are classified primarily by histology into 12 major categories using the International Classification of Childhood Cancers (ICCC). For both males and females, lymphoid leukemia was the leading type of cancer diagnosed in children under age 15. Gonadal germ cell tumors and carcinomas were the most common cancers diagnosed among males and females, respectfully, ages 15 to 19 years.

Great strides have been made in the treatment of children with cancer, resulting in vastly improved survival and reduced mortality. Nationwide, mortality rates from all childhood cancers combined decreased steadily from 1974-1999 (Figure 5). The overall 5-year relative survival for most childhood cancers diagnosed before age 15 has risen to nearly 75 percent, and the 10-year survival is approaching 70 percent. The greatest impact

in these positive trends has been from dramatic improvement in survival from leukemia, which accounts for almost one-third of all cancers in children under age 15, and one-fourth of all cancers under age 20. Clinical trials have played a significant role in the dramatic improvement in childhood cancer treatment and cure rates in the last 30 years (See page 50 for additional information on clinical trials).

**Figure 5. National Trends in 5-Year Relative Survival Among Children, 0-14 Years Old**



NHL = Non-Hodgkin lymphoma; ONS = Other nervous system.

Source: National SEER Program, 1975-2000, Division of Cancer Control and Population Sciences, NCI; American Cancer Society Surveillance Research, National Home Office

**Table 6. Childhood Cancers by Age and Sex, Hawai'i, 1985-2000**

Age Group	Sex	All	Leukemia	Lymphoma	Brain/CNS	Symp. Nerv.	Retino-blastoma	Renal	Hepatic	Bone	Soft Tissue	Germ cell	Carcinomas
00-04	Male	158	62	5	27	23	^^	13	7	^^	5	10	
00-04	Female	129	51		22	23	15	^^	^^		6	^^	^^
05-09	Male	76	31	8	19	^^		^^		6	^^	^^	^^
05-09	Female	68	30	4	18	^^				6	^^	^^	^^
10-14	Male	85	20	17	18	^^			^^	9	7	5	6
10-14	Female	67	13	8	18					5	6	5	11
15-19	Male	128	17	21	9	^^		^^		17	16	25	20
15-19	Female	117	15	16	6					9	15	25	29
00-14	Male	319	113	30	64	26	^^	16	8	16	16	17	7
00-14	Female	264	94	12	58	24	15	^^	^^	11	16	11	14
00-19	Male	447	130	51	73	27	^^	17	8	33	32	42	27
00-19	Female	381	109	28	64	24	15	^^	^^	20	31	36	43
05-19	Male	289	68	46	46	^^		^^	^^	32	27	32	27
05-19	Female	252	58	28	42	^^				20	25	33	41

Note: Number of cases represent 16 year totals. ^^ Data not presented for fewer than 5 cases in the 16 year time period. CNS=Central Nervous System

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

# Meeting the Needs of Hawai'i's Diverse Populations

**H**awai'i is the 50th state of the United States and comprises a group of 8 main islands in the Pacific Ocean. Hawaiians are the native Polynesian population of the islands and are thought to have first arrived from other areas of Polynesia between 200 BC to 700 A.D. It is estimated that there were 300,000 Hawaiians in 1778 (Nordyke), when Captain Cook first visited the islands. However, the population was ravaged by disease, and by 1900, only 30,000 full-blooded Hawaiians remained. Native Hawaiians have traditionally intermarried with persons of other races, and today most Hawaiians are part-Hawaiians.<sup>1</sup>

From the time of Captain Cook's visit, other racial groups began migrating to Hawai'i. Caucasians were one of the first groups to arrive, and the number of Caucasians in Hawai'i has steadily increased through the 1900's, spurred by the designation of Hawai'i as a U.S. territory in 1900 and as a U.S. state in 1959. Chinese were the first Asians to migrate to Hawai'i, with as many as 56,000 migrating as contract workers between 1852-1899. From 1884 to 1924, more than 200,000 Japanese men, women and children immigrated to Hawai'i. The most recent large immigrant group has come from the Philippines. Between 1906 and 1946, a large labor recruitment effort in Hawai'i drew about 100,000 Filipinos migrants, mostly males from rural provinces. A second wave of immigration began in 1965, when many families moved to reunite.<sup>2</sup>

Hawai'i is unique in that there is no majority racial or ethnic group. Asians, Caucasians, and Native Hawaiian/Pacific Islanders are the major racial groups in Hawai'i. Among Asians, the most common ethnic groups are Chinese, Japanese, and Filipinos, while Native Hawaiians are the most common ethnic group among Pacific Islanders. The definition of ethnicity used in this publication differs somewhat from that used by the federal Office of Management and Budget (OMB) categories, but is consistent with draft recommendations from the Hawai'i Department of Health (DOH) for collecting, defining, measuring, and reporting race and ethnicity data in the state.<sup>3</sup> (See terminology in text box on page 12).

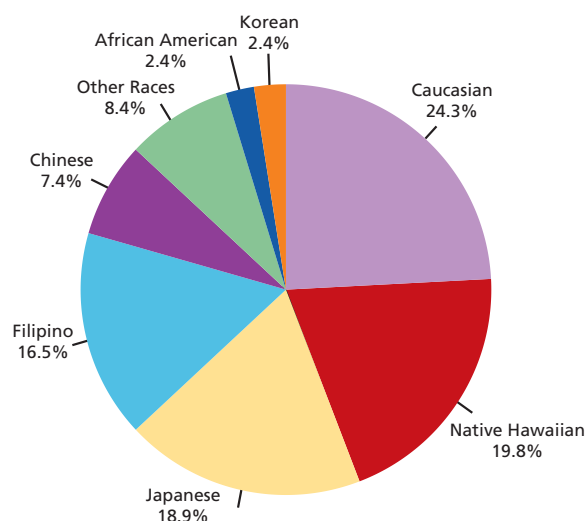
Hawai'i has the highest proportion of individuals of mixed race/ethnicity in the United States, with two of every ten residents describing themselves as more than one race (2000 U.S. Census). This diversity is likely to be an increasing trend in this state. Of the babies born in Hawai'i in the year 2000, nearly 60 percent were listed as having at least two races, and close to half of the marriages among Hawai'i residents for that year were between individuals of different races.<sup>4</sup> In general, however, at the advanced ages at which most cancers occur, racial/ethnic groups are much more homogeneous.

Today, five racial/ethnic groups—Hawaiians, Japanese, Chinese, Filipinos and Caucasians—make up 87% of the state's more than 1.2 million population (Figure 6). Caucasians comprise 24.3% of Hawai'i's 2000 population. Native Hawaiians/part-Hawaiians made up 19.8% of the state's population, followed by 18.8% Japanese, 16.5% Filipino and 7.4% Chinese. The remainder of Hawai'i's population is made up of other Asians (5.8%), of which Koreans (2.4%) and Vietnamese (0.8%) are the largest groups, other Pacific Islanders (2.1%), of which Samoans (0.8%) are the largest group, African Americans (2.4%), and others (3.8%). Such diversity in population demographics is seen throughout the state (Table 7).

## References:

1. Eleanor C. Nordyke, *The Peopling of Hawai'i*. Honolulu, HI: The University of Hawai'i Press, 1989.
2. Ibid.
3. Catherine Sorensen, DrPH, *Public Health Race and Ethnicity Data: Developing a Common Language*, Honolulu, HI: Hawai'i Department of Health, Unpublished manuscript, 2003.
4. Department of Business, Economic Development and Tourism, *State of Hawai'i Data Book*, 2001, <http://www.hawaii.gov/dbedt/db01/sec02.html>.

**Figure 6. Population by Race/Ethnicity and County, Hawai'i, 2000**



Source: Hawai'i Tumor Registry at the Cancer Research Center of Hawai'i, University of Hawai'i

**Table 7. Population by Race/Ethnicity and County, Hawai'i, 2000**

	Total	African American %	Caucasian %	Chinese %	Filipino %	Hawaiian %	Japanese %	Korean %	Other Races %
State	1,211,537	2.4	24.3	7.4	16.5	19.8	18.9	2.4	8.4
Hawai'i	148,678	0.9	31.6	3.5	11.8	28.9	15.4	0.9	7.1
Honolulu	876,157	3.0	21.3	9.0	16.5	17.5	20.8	3.0	9.0
Kaua'i	58,461	0.7	29.5	3.1	22.6	23.1	15.1	0.5	5.4
Maui	128,094	0.8	33.9	2.9	19.4	23.4	11.7	0.9	7.0

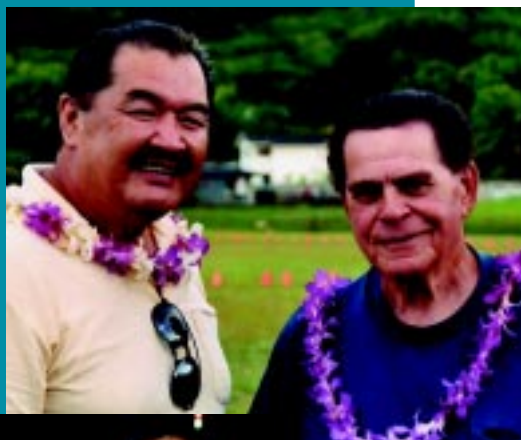
Note: An additional 147 individuals live in Kalawao County.

Source: U.S. Census 2000, provided by Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i



# Cancer In Diverse Populations

*Diversity is the process of valuing people through actions. These differences include ethnicity, gender, age, physical ability, communication styles, sexual orientation, economic status, education, and culture*  
(American Cancer Society, 1995)



For all races combined, individuals in Hawai'i generally have lower cancer incidence rates compared to those for the United States as a whole (see U.S. and Hawai'i comparisons for selected sites in the cancer site sections that follow). However, within Hawai'i's population, variations in incidence and mortality rates for the leading cancer sites—lung and bronchus, breast, prostate, and colon and rectum—are seen among the major racial/ethnic groups. Hawaiian males have the highest incidence rates for lung and bronchus cancer, while Hawaiian females have the highest incidence rates for breast cancer. Caucasian males have the highest incidence rates for prostate cancer. Japanese males have the highest incidence of colorectal cancer. In terms of cancer mortality, Hawaiian males have the highest mortality rates for lung and bronchus cancer and colorectal cancer, while Hawaiian females have the highest mortality rates for breast, lung, and colorectal cancers. Caucasian males have the highest mortality rates for prostate cancer.

The most frequently diagnosed cancers and leading cancer deaths will also vary depending on sex and race/ethnicity (Table 8). With the exception of Hawaiian males, prostate cancer is the most commonly diagnosed cancer among males in Hawai'i, while breast cancer is the most commonly diagnosed cancer among females of all race/ethnicities in the

state. Lung and bronchus cancer is the most commonly diagnosed cancer among Hawaiian males. Colorectal cancers are within the top five cancers diagnosed among males and females in all racial/ethnic groups in Hawai'i. Non-Hodgkin's lymphoma ranks within the top five cancers diagnosed among males of all race/ethnicities, while endometrial (corpus uteri) cancer is within the top five cancers diagnosed among females of all race/ethnicities. Unique in the five most frequently diagnosed cancers are melanomas of the skin among Caucasian males and females, and liver cancer diagnosed among Chinese males in Hawai'i.

In terms of leading cancer deaths, lung and bronchus cancer is first among males and females in all racial/ethnic groups. However, variations in the remaining four leading cancer death sites are seen (Table 8). For example, whereas prostate cancer is the second leading cause of cancer deaths among Caucasian, Chinese, and Filipino males in Hawai'i, it is the third leading cause of cancer deaths among Hawaiian males and fourth among Japanese males. Among females in Hawai'i, breast cancer is the second leading cause of cancer deaths in all racial/ethnic groups with the exception of Japanese females. Among Japanese females in Hawai'i, colorectal cancer is the second leading cause of cancer deaths. Liver cancer is a leading cause of cancer death among Chinese, Filipino, and Hawaiian males. Pancreatic cancer is within the leading causes of cancer deaths among males of all race/ethnicities with the exception of Native Hawaiians, and among females of all racial/ethnicities, with the exception of Caucasian females.

## 'Imi Hale — Native Hawaiian Cancer Awareness, Research and Training Network

'Imi Hale is a 5-year project funded by The National Cancer Institute — Center to Reduce Cancer Health Disparities, aimed at reducing the burden of cancer among Native Hawaiians. It is one of 18 Special Population Networks (SPN) in the nation with the distinction of being the only community-based SPN, outside of an academic institution or hospital. Objectives of the 'Imi Hale include: increasing cancer awareness among Native Hawaiians, educating the Native Hawaiian community about clinical trials, increasing the number of Native Hawaiian researchers as well as the number of research grants that address cancer in Native Hawaiians, and lastly, to establish community based participatory research protocols that are inclusive of Native Hawaiian communities and respectful of Native Hawaiian cultural beliefs and customs. As a research infrastructure, Imi Hale currently provides training and mentorship to more than 65 Native Hawaiian researchers. For additional information, contact JoAnn Umilani Tsark, Project Director, Papa Ola Lokahi/Imi Hale (808) 597-6553.



**Table 8. Five Leading Cancer Sites in Cases and Deaths by Sex and Race/Ethnicity, Hawai'i, 1995-2000**

INCIDENCE	CAUCASIAN		CHINESE		FILIPINO		JAPANESE		NATIVE HAWAIIAN	
	Cases	Percent of Total	Cases	Percent of Total	Cases	Percent of Total	Cases	Percent of Total	Cases	Percent of Total
<b>MALE</b>										
Colon and Rectum	550	11.0	127	12.6	344	14.7	906	19.4	226	12.6
Liver			41	4.1						
Lung and Bronchus	671	13.5	152	15.1	416	17.8	638	13.6	383	21.3
Melanomas of the Skin	574	11.5								
NHL	168	3.4	55	5.5	93	4.0	156	3.3	67	3.7
Pancreas										
Prostate	1,294	26.0	327	32.5	704	30.0	1,326	28.3	352	19.6
Stomach					90	3.8	375	8.0	89	4.9
Thyroid										
<b>Total, All Sites</b>	<b>4,978</b>	<b>100.0</b>	<b>1,007</b>	<b>100.0</b>	<b>2,343</b>	<b>100.0</b>	<b>4,680</b>	<b>100.0</b>	<b>1,798</b>	<b>100.0</b>
<b>FEMALE</b>										
Breast	1,379	34.2	297	32.4	502	30.5	1,573	36.0	769	35.7
Colon and Rectum	378	9.4	131	14.3	167	10.1	703	16.1	177	8.2
Corpus Uteri	208	5.2	46	5.0	126	7.7	278	6.4	174	8.1
Lung and Bronchus	483	12.0	91	9.9	165	10.0	340	7.8	271	12.6
Melanoma of the Skin	273	6.8								
Ovary									88	4.1
Stomach							224	5.1		
Thyroid			38	4.1	134	8.1				
<b>Total, All Sites</b>	<b>4,034</b>	<b>100.0</b>	<b>916</b>	<b>100.0</b>	<b>1,646</b>	<b>100.0</b>	<b>4,370</b>	<b>100.0</b>	<b>2,153</b>	<b>100.0</b>
MORTALITY	CAUCASIAN		CHINESE		FILIPINO		JAPANESE		NATIVE HAWAIIAN	
	Deaths	Percent of Total	Deaths	Percent of Total	Deaths	Percent of Total	Deaths	Percent of Total	Deaths	Percent of Total
<b>MALE</b>										
Colon and Rectum	148	9.1	27	7.6	77	8.9	233	12.9	93	10.8
Liver			23	6.4	55	6.4			43	5.0
Lung and Bronchus	453	27.8	122	34.2	263	30.4	441	24.5	295	34.3
NHL	74	4.5								
Pancreas	79	4.8	28	7.8	51	5.9	120	6.7		
Prostate	209	12.8	36	10.1	113	13.0	163	9.1	71	8.2
Stomach							227	12.6	57	6.6
<b>Total, All Sites</b>	<b>1,630</b>	<b>100.0</b>	<b>357</b>	<b>100.0</b>	<b>866</b>	<b>100.0</b>	<b>1,800</b>	<b>100.0</b>	<b>861</b>	<b>100.0</b>
<b>FEMALE</b>										
Breast	231	19.0	42	13.6	76	16.5	149	11.4	139	16.9
Colon and Rectum	106	8.7	33	10.7	42	9.1	172	13.2	58	7.1
Corpus Uteri										
Lung and Bronchus	306	25.1	71	23.0	98	21.3	219	16.8	201	24.5
Melanomas of the Skin										
NHL	53	4.4			25	5.4				
Ovary	66	5.4							39	4.8
Pancreas			25	8.1	28	6.1	135	10.3	50	6.1
Stomach			18	5.8			124	9.5		
Thyroid										
<b>Total, All Sites</b>	<b>1,217</b>	<b>100.0</b>	<b>309</b>	<b>100.0</b>	<b>461</b>	<b>100.0</b>	<b>1,306</b>	<b>100.0</b>	<b>821</b>	<b>100.0</b>

■ Most frequently diagnosed or leading cause of cancer death

■ Second most frequently diagnosed or second leading cause of cancer death

■ Third most frequently diagnosed or third leading cause of cancer death

Note: Counts are 6 year totals. NHL = Non-Hodgkin lymphomas. Liver includes hepatic bile duct. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i.

## Presentation of Cancer Data by Race/Ethnicity

The racial/ethnic mixture in Hawai'i's population complicates the classification of individuals by the racial/ethnic groups used in grouped cancer rates. As described on page 8, cancer rates represent the number of individuals who were newly diagnosed or who died of cancer (numerator) in a given time period, within a specific population (denominator). Rules have been developed and implemented for assigning race/ethnicity in Hawai'i population estimates that are intended to best match the race/ethnicity from the numerator sources of the Hawai'i Tumor Registry and the Hawai'i state death file, while retaining precision in the estimates by including as many individuals as possible in a group. In calculating rate estimates, if the race/ethnicity does not match between the numerator (number of individuals who were diagnosed or who died of cancer) and the denominator (total number of individuals within the specific group), incorrect conclusions may be drawn.



Per Hawai'i Tumor Registry (HTR) guidelines, persons who are any-part Hawaiian were classified as "Native Hawaiians/part-Hawaiians" in this publication; the designation "Native Hawaiian" is used for this group in all corresponding figures and tables. The white classification includes non-Hispanic whites, but no mixtures; the designation "Caucasian" is used for this group in all figures, tables, and text throughout this publication. Persons who are white and another race were assigned the other race. Persons who have two or more other (non-Hawaiian, non-white) races or ethnicities are apportioned to the groups.

The five major racial/ethnic groups—Caucasian, Chinese, Filipino, Native Hawaiian, and Japanese—are the only groups large enough to allow stable estimation of cancer incidence and mortality rates. Counts, however, are presented for selected cancer sites for the smaller population groups (Table 9). Population size is also an issue when presenting cancer data for areas smaller than the state level. At the county level, numbers are too small to provide stable rates, and are confounded by racial/ethnic differences. Therefore, at the county level, total counts only, all races combined, are provided for select cancer sites (Table 10). The number of cases and deaths are primarily a reflection of the county's population size and age. Actual counts are useful in planning local programs, but should not be used for comparisons between counties. For population comparisons, only age-adjusted rates should be used (See text box page 9).

The population estimates for the year 2000 are provided by the Bureau of the Census. However, for earlier years (1975-1999), population estimates developed by the HTR were used. Estimates are based on sex-age group census counts, apportioned to ethnic groups based on the distribution found in a statewide health survey conducted by the Hawai'i Department of Health. Census counts were not used directly for earlier years (1975-1999) because Hawaiians were vastly undercounted in the 1970, 1980, and 1990 censuses due to the wording pertaining to race on these earlier census forms.

**Table 9. Cancer Incidence Counts for Thirteen Race/Ethnic Groups, Selected Cancer Sites, Hawai'i, 1995-2000**

Cancer Type	African American	American Indian	Caucasian Non-Hispanic	Chinese	Filipino	Japanese	Korean	Native Hawaiian	Samoan	Tonga and Other Pacific Islander	Vietnamese and Other Asian
All Sites-Male	137	290	4,978	1,007	2,343	4,680	296	1,798	130	72	92
All Sites-Female	95	336	4,034	916	1,646	4,370	378	2,153	161	92	127
Breast-Female	29	101	1,379	297	502	1,573	88	769	39	23	30
Colon and Rectum-Male	10	15	550	127	344	906	42	226	9	6	10
Colon and Rectum-Female	14	20	378	131	167	703	53	177	10	3	15
Lung and Bronchus-Male	19	17	671	152	416	638	58	383	20	20	20
Lung and Bronchus-Female	9	18	483	91	165	340	51	271	13	13	9
Prostate-Male	45	77	1,294	327	704	1,326	53	352	33	8	13

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 10. Average Annual Cancer Cases and Cancer Deaths by County, Hawai'i, 1995-2000**

	TOTAL ALL SITES		BREAST (FEMALE)		COLON AND RECTUM		LUNG AND BRONCHUS		PROSTATE	
	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality	Incidence	Mortality
Hawai'i	633	231	104	15	78	24	82	57	75	15
Honolulu	3,653	1,196	588	76	488	122	472	314	518	68
Kaua'i	243	89	32	6	31	8	29	23	38	7
Maui	494	164	82	13	56	16	63	38	74	12

Note: The average annual (or total) number of cases and deaths are primarily a reflection of the county's population size and age. Counts are useful in planning local programs, but should not be used for comparisons between counties.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

*The five major racial/ethnic groups — Caucasian, Chinese, Filipino, Native Hawaiian, and Japanese — are the only groups large enough to allow stable estimation of cancer incidence and mortality rates.*



# Racial/Ethnic Disparities in Cancer

**V**ariations in the cancer rates for racial and ethnic groups have been described as “health disparities.” According to the National Institutes of Health, health disparities are defined as “differences in the incidence, prevalence, mortality, and burden of cancer and related adverse health conditions that exist among specific population groups in the United States. Population groups may be characterized by gender, age, ethnicity, education, income, social class, disability, geographic location, sexual orientation” (News from the NCI, April 21, 2002, <http://newscenter.cancer.gov/pressreleases/healthdisparities.html>). As reflected in this definition, the differences in cancer incidence and mortality among racial/ethnic groups may be influenced by variations in several factors.

Socioeconomic status (SES) in particular appears to play a major role in cancer-related disparities seen among different racial/ethnic groups due to adopted behaviors that cause cancer, such as smoking and poor screening behaviors. The American Cancer Society estimates that cancer survival rates of poor individuals are 10 to 15 percent lower than those of other Americans (American Cancer Society, 1990). Some of the proposed reasons for such disparities in survival rates include the relationship between lower SES status with delayed diagnosis and treatment at a later stage of disease. In addition, access to care may be limited due to transportation difficulties and/or lack of health insurance. Close to 8 percent of adult residents of Hawai‘i under age 65 do not have health insurance (Table 11). Access may also be limited due to inadequate numbers of facilities and providers in certain areas of the state. Hawai‘i’s unique geographical characteristics (multiple islands with a mix of urban and rural areas) may hinder individuals’ access to cancer diagnosis and treatment facilities.

Certain barriers to optimal cancer screening, diagnosis, and treatment may exist regardless of SES, health insurance status, or provider base. According to a recent Institutes of Medicine (IOM) report, such disparities “are complex and rooted in historic and contemporary inequities and involve many participants at several levels, including health systems, their administrative and bureaucratic processes, utilization managers, healthcare professionals, and patients.” Disparities may be compounded by the institutional environment (legal, financial, and policy) and by the under-representation of racial and ethnic minorities among health professionals. Other barriers suggested in the IOM report may be related to health seeking behaviors of patients and health provider behavior in the clinical encounter. Awareness of such factors can assist in developing programs and services to best meet needs.

(Additional information on racial and ethnic disparities in health care can be found in publications of the *Intercultural Cancer Council*.)

## References:

Institutes of Medicine, *Unequal Treatment: Confronting Racial and Ethnic Disparities in Health Care*, Washington, DC: The National Academy Press, 2002 <http://www.nap.edu/books>.

**Table 11. Percentage of Adults Ages 18-65 Who Do Not Have Health Insurance, Hawai‘i, 2001**

Demographic Characteristics	Do Not Have Health Insurance (%)
<b>TOTAL</b>	<b>7.8</b>
<b>GENDER</b>	
Male	9.5
Female	6.0
<b>RACE/ETHNICITY</b>	
Caucasian	8.6
Native Hawaiian	10.3
Filipino	6.4
Japanese	3.3
Others	10.6
<b>EDUCATION</b>	
<High School	13.5
<b>HOUSEHOLD INCOME</b>	
<\$15,000	20.9
\$15,000-24,999	9.3
\$25,000-49,999	5.5
\$50,000-74,999	3.2
>=\$75,000	1.8
Unknown/Refused	10.2
<b>COUNTY</b>	
Honolulu	6.7
Hawai‘i	11.5
Kaua‘i	9.7
Maui	10.3

For a complete report, including confidence interval ranges at 95% probability, visit the Hawai‘i Department of Health website, 2001 State of Hawai‘i Behavioral Risk Factor Surveillance Report.

Source: Hawai‘i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)

# Cancer in Hawai'i: Major Sites and Critical Issues

**A**s is true of the United States as a whole, four cancer sites are responsible for more than half of the state's cancer burden. These include breast, colon and rectum combined, lung and bronchus, and prostate. In Hawai'i, these four cancer sites account for 56 percent of the newly diagnosed cancers (incidence) and 48 percent of all cancer deaths (mortality). This presents both challenges and opportunities. The challenge: the human and financial toll taken by these four cancers is high. The opportunity: something can be done about each of these cancers. Other cancers that can be similarly influenced include cervical cancer and skin (melanoma) cancer. Steps can be taken to prevent these cancers and to detect them early when they are most treatable. The following section provides, in alphabetical order, an overview of the challenges and opportunities these cancer sites present. Following the cancer site sections additional information is provided on prevention, early detection, and quality of life issues that directly affect our ability to save lives and diminish suffering from cancer.

## Breast (Female) Cancer

## Cervical Cancer

## Colon and Rectum Cancer

## Lung and Bronchus Cancer

## Prostate Cancer

## Skin Cancer (Melanoma)

## Quality School-based Health Education

## Nutrition, Physical Activity, Obesity and Cancer

## Environmental Cancer Risks





# Breast (Female) Cancer

Approximately 800 cases of female invasive breast cancer are diagnosed in Hawai'i each year. Another 100 deaths are caused by the disease. This does not include in situ breast cancers that have not invaded or penetrated surrounding tissues.

Breast cancer is the most common cancer among women in Hawai'i, regardless of race/ethnicity. Among Hawai'i's females, it accounts for more than one-third of all cancer cases, but just over 15 percent of the cancer deaths. Most female breast cancer incidence (more than 60 percent) occurs in women age 55 and older (Figure 7). On average, only one man dies from breast cancer each year in Hawai'i.

Hawaiian females, compared to other major racial/ethnic groups in the state, have the highest breast cancer incidence and mortality rates. Hawaiian females have an incidence rate 1.7 times that of Filipino females, who display the lowest female breast cancer incidence rates in Hawai'i. The death rate for Hawaiian females is almost 1.2 times that of Caucasian females, and more than twice the mortality rate for Chinese, Japanese, and Filipino females in Hawai'i (Figure 8). This finding may suggest major differences in early diagnosis,

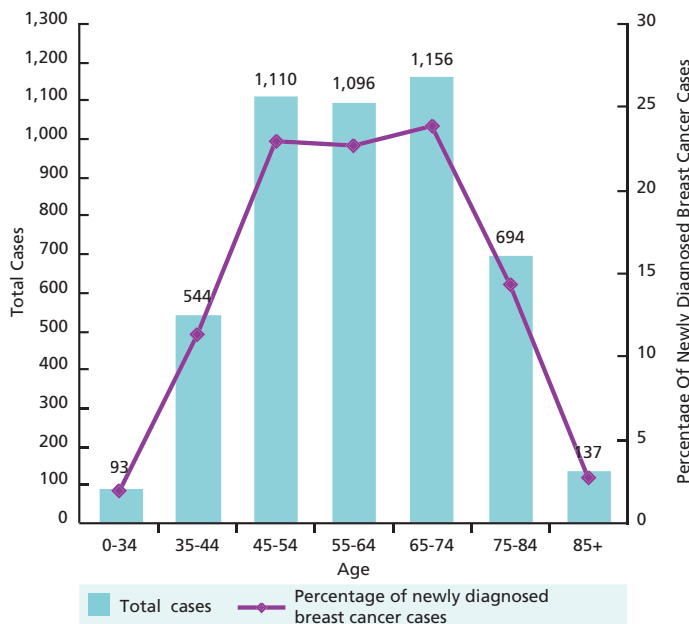
treatment, and other risk factors influencing this disease.

The risk of breast cancer is higher in women who have a personal or family history of breast cancer, biopsy-confirmed atypical hyperplasia, increased breast density, a long

menstrual history, obesity after menopause, recent use of oral contraceptives or post-menopausal estrogen and progestin, who have never had children or had their first child after age 30, or who consume alcoholic beverages. Incidence rates appear to correlate with variations in diet, especially fat intake, while vigorous physical activity and maintenance of a healthy body weight are associated with lower risk.

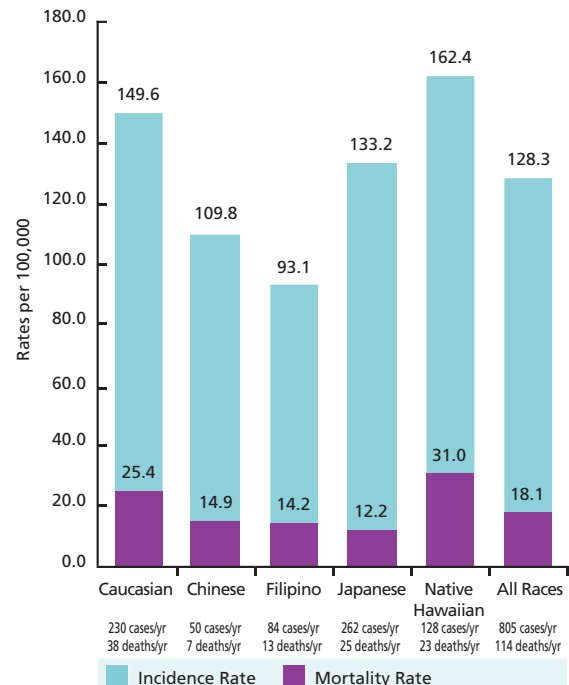
Similar to national trends, the incidence of breast cancer in Hawai'i has increased over the last two decades, most notably among Filipino and Japanese women, where rates roughly doubled over 26 years of observation by the Hawai'i Tumor Registry (Figure 9, Table 12). The rise in breast cancer incidence is not clearly understood, but is most likely due in part to increased screening efforts. Mortality rates have declined across all race/ethnic groups (Table 12).

**Figure 7. Female Breast Cancer Incidence by Age of Diagnosis, Hawai'i Residents, 1995-2000**



Cases are 6 year totals. Incidence includes invasive cancers only. In situ cases are excluded. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 8. Female Breast Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Hawai'i Residents, 1995-2000**



Cases and deaths are 6 year average, rounded to the nearest whole. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

# Breast Cancer Early Detection and Screening

**W**hen breast cancer is diagnosed at its earliest stage, survival is excellent. When detected at a localized stage, the 5-year relative survival is 97 percent. That rate falls to 78 percent when the cancer is detected at a regional stage, and 23 percent when detected at a distant stage. Approximately seven of every ten cases of female invasive breast cancer in Hawai'i are detected at early stage (localized). Stage of diagnosis varies among different racial/ethnic groups in Hawai'i, with Japanese, Chinese, and Caucasians more likely to be diagnosed when the disease is at its earliest stage, compared to Filipino and Hawaiian females (Table 3).

A breast health program of annual mammograms starting at age 40 and clinical breast examinations as part of a periodic health exam are the most important actions a woman can take to detect breast cancer at its earliest stage. Breast self exam is an option for women starting in their 20's. Women at increased risk (e.g. family history, genetic tendency, past breast cancer) should speak with their doctors about benefits and limitations of more frequent and/or additional tests. In 2001, more than 90 percent of women in Hawai'i age 40 and older reported ever having a mammogram. Of those 90 percent, three-quarters reported having the mammogram within the past year (Table 13). This means approximately 2/3 of all women interviewed (those who have and have not ever had a mammogram) reported following the American Cancer Society guidelines for mammography screening. Of women who had ever had a mammogram, Filipino females were less likely to report having been screened within the past year (Table 13).

**Table 12. Trends In Female Breast Cancer Incidence Rates by Race/Ethnicity, Hawai'i, 1975-2000**

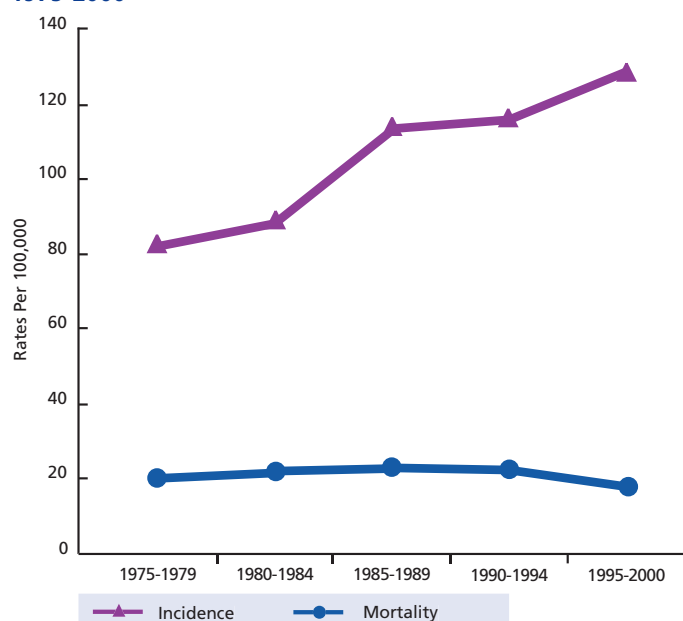
	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian	All Races
<b>INCIDENCE</b>						
1975-1979	123.2	81.4	43.6	60.5	117.1	82.7
1980-1984	126.0	76.6	48.3	71.8	131.6	89.2
1985-1989	159.0	92.5	74.0	97.7	138.9	113.8
1990-1994	145.6	99.5	82.6	109.3	139.6	116.0
1995-2000	149.6	109.8	93.1	133.2	162.4	128.3
<b>MORTALITY</b>						
1975-1979	29.8	19.5	^ ^	13.1	^ ^	20.5
1980-1984	31.0	20.5	14.7	11.3	42.9	22.1
1985-1989	34.6	17.9	14.7	13.9	40.2	22.9
1990-1994	31.0	16.5	19.1	17.0	31.0	22.4
1995-2000	25.4	14.9	14.2	12.2	31.0	18.1

Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.

^ ^ Rates based on small numbers (<20 per time period) may be unstable and are not presented.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 9. Trends in Female Breast Cancer Incidence and Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2000**



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 13. Percentage of Women 40 and Older in Hawai'i Who Have Had a Recent Mammogram, 2001**

Demographic Characteristics	Ever Had a Mammogram Percent	Less Than 1 year * Percent
<b>TOTAL</b>	<b>90.5</b>	<b>76.5</b>
<b>AGE GROUP</b>		
40-49 Years	84.5	67.3
50-59 Years	93.8	79.3
60+ Years	93.3	81.4
<b>RACE/ETHNICITY</b>		
Caucasian	88.2	74.7
Native Hawaiian	89.2	74.5
Filipino	89.6	71.8
Japanese	95.2	81.0
Others	89.1	77.6
<b>COUNTY</b>		
Honolulu	91.7	77.4
Hawai'i	90.4	70.7
Kaua'i	85.6	79.3
Maui	84.5	75.4

\* Denominator = Those women who responded "yes" to ever having a mammogram. 90.5% of the 1,698 women surveyed stated they had "ever had" a mammogram. Of this 90.5%, 76.5% stated it was within the past year. For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.

Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)

# Cervical Cancer

Approximately 61 women in Hawai'i are diagnosed with invasive cervical cancer each year. Another 12 women die from the disease. As cervical cancer screening has become more prevalent, pre-invasive lesions of the cervix are

## Invasive Cervical Cancer, Hawai'i and U.S.

Female	Incidence Rate	Mortality Rate
U.S.	10.0	2.8
Hawai'i	10.1	1.9

Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Hawai'i data (1995-2000): Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. incidence data (1996-2000) from NAACCR participating registries: Cancer in North America, 1996-2000, North America Association of Central Cancer Registries (NAACCR); U.S. mortality data from [statecancerprofiles.cancer.gov](http://statecancerprofiles.cancer.gov), National Cancer Institute (NCI).

detected far more frequently than invasive cancer. Invasive cervical cancer represents less than 3 percent of all female cancer incidence and 2 percent of all female cancer mortality in Hawai'i.

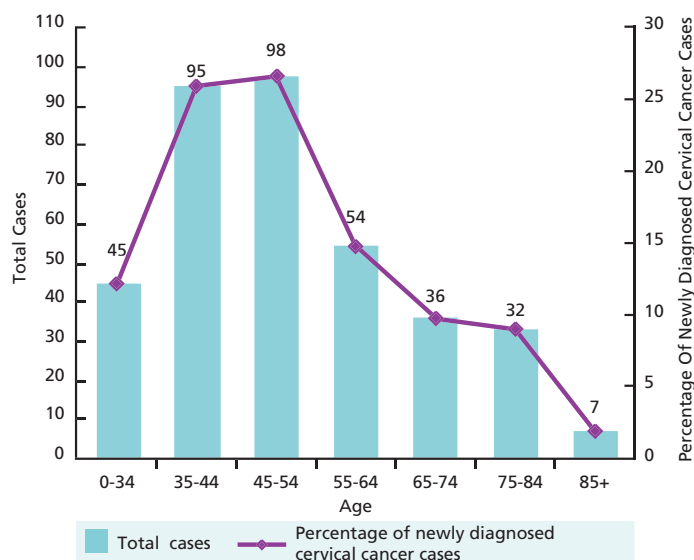
Approximately 65 percent of new cases of invasive cervical cancer are diagnosed in

women below the age of 55 (Figure 10). Approximately one of every three cervical cancer deaths occurs among women age 55 and older.

When considering all racial/ethnic groups in Hawai'i, cervical cancer ranked eleventh among the leading cancers diagnosed in women. Hawaiian females have an incidence rate 1.4 times that of Caucasians and more than twice that of Japanese women (Figure 11). Rates, however, for both incidence and mortality due to cervical cancer have declined over the past 26 years (Figure 12). Among any one race/ethnic group in Hawai'i, there were fewer than 20 deaths due to cervical cancer in the six year time period between 1995-2000 (Figure 11).

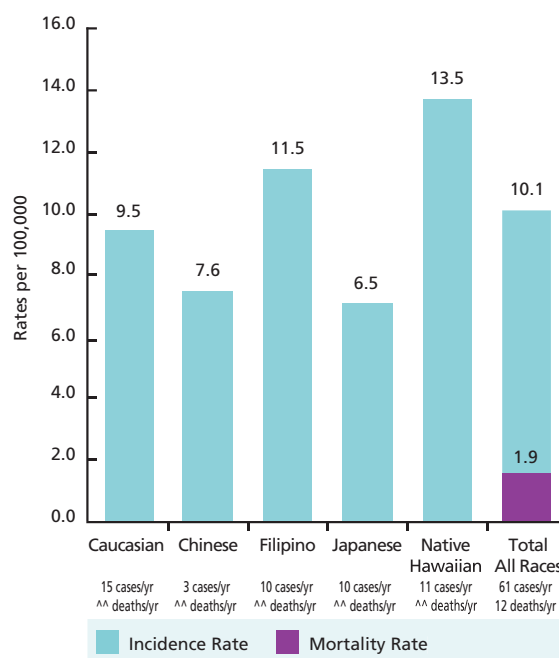


**Figure 10. Cervical Cancer Incidence by Age of Diagnosis, Hawai'i Residents, 1995-2000**



Cases are 6 year totals. Incidence includes invasive cancers only. In situ cases are excluded. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 11. Cervical Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Hawai'i Residents, 1995-2000**



^^ Counts and rates based on small numbers (<20 per time period) are suppressed. Cases and deaths are 6 year average, rounded to the nearest whole. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.

Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

# Cervical Cancer Prevention, Early Detection, and Screening

Of all cancers, cervical cancer is among the most amenable to prevention and early detection through screening. Most cervical cancers can be prevented in two ways. The first way is to prevent pre-cancers. In many cases this can be done by avoiding multiple sexual partners, by young women delaying their first sexual experience until they are older, and by not smoking. In addition, using a condom during sexual intercourse may provide some protection from infection by human papilloma virus (HPV), a virus that is strongly linked to development of cervical cancer. The second way to prevent cervical cancer is to have regular Pap tests, which can detect pre-cancers and infection by HPV (see ACS screening guidelines on page 43). Treating these problems can stop cervical cancer before it fully develops.

The survival rates for in situ cancers at 10 years is 99 percent. These rates drop sharply — to less than 50 percent — if the cancer has spread by the time it is detected. In any age group, Chinese, Filipino and Hawaiian women were more likely to be diagnosed at an invasive stage of cervical cancer (Table 3). Over the past 25 years, the high prevalence of Pap screening has led to a significant reduction in the incidence of invasive cervical cancer. In a 2001 survey of women age 18 and older in Hawai'i, close to 95 percent of the respondents indicated ever having a Pap test (Table 15). Of those women, close to 94 percent stated having the exam within the past 3 years. This means 9 out every 10 women interviewed (those who have and have not ever had a Pap test) reported following the American Cancer Society guidelines for cervical cancer screening.

**Table 14. Trends In Cervical Cancer Incidence Rates by Race/Ethnicity, Hawai'i, 1975-2000**

	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian	All Races
<b>INCIDENCE</b>						
1975-1979	12.1	^ ^	^ ^	9.0	20.0	12.2
1980-1984	10.3	^ ^	12.3	6.1	14.7	10.1
1985-1989	13.6	^ ^	12.7	6.5	13.1	10.8
1990-1994	11.4	^ ^	9.4	9.3	12.7	10.9
1995-2000	9.5	7.6	11.5	6.5	13.5	10.1

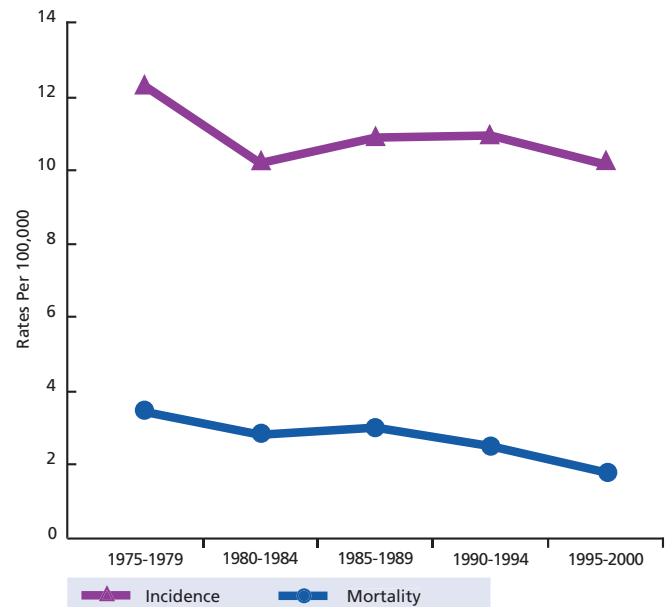
Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.

^ ^ Rates based on small numbers (<20 per time period) may be unstable and are not presented.

Trends in mortality not presented due to small numbers (< 20 per time period) in all race/ethnic groups.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 12. Trends In Cervical Cancer Incidence and Mortality Rates, All Races/Ethnicities Combined, Hawai'i, 1975-2000**



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 15. Percentage of Women 18 and Older in Hawai'i Who Have Had a Recent Pap Test, 2001**

Demographic Characteristics	Ever Had a Pap Smear Percent	Less Than 3 Years Ago* Percent
<b>TOTAL</b>	<b>94.0</b>	<b>93.6</b>
<b>AGE GROUP</b>		
18-24 Years	82.1	96.6
25-34 Years	95.2	96.7
35-44 Years	97.7	95.0
45-54 Years	96.8	92.9
55-64 Years	96.3	94.7
65+ Years	91.4	87.2
<b>RACE/ETHNICITY</b>		
Caucasian	96.4	93.9
Native Hawaiian	95.6	88.7
Filipino	91.6	95.1
Japanese	93.1	94.3
Others	91.4	94.9
<b>COUNTY</b>		
Honolulu	93.6	94.2
Hawai'i	94.4	92.0
Kaua'i	92.4	91.5
Maui	97.5	92.4

\* Denominator = Those women who responded "yes" to ever having a Pap test. Statewide, 94.0% of the 2,537 women aged 18 and older who were surveyed stated they had "ever had" a mammogram. Of this 94.0%, 93.6% stated it was within the past three years. For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.

Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)



# Colon and Rectum Cancer

**A**pproximately 446 new cases of colon cancer and 207 cases of rectum cancer are diagnosed in Hawai'i each year. Colon cancer causes 143 deaths per year, while rectum cancer leads to approximately 31 deaths each year. Combined, colon and rectum cancers (hereafter referred to as

colorectal cancer) account for approximately 13 percent of all cancer incidence and 10 percent of all cancer mortality in Hawai'i, males and females combined. When considering the total number of newly diagnosed cancer cases among men and women, colorectal cancer is the third most common cancer among males (following prostate and lung) and second among females (following breast). For both sexes combined, colorectal cancer is second (following lung) in the number of total cancer deaths in the state (Figure 3). The risk of colorectal cancer increases significantly with age. More than 80 percent of Hawai'i residents who develop colorectal cancer are age 55 or older at the time of diagnosis (Figure 13).

When considering differences among race/ethnicities, the highest incidence rates for colon cancer are among Japanese males in Hawai'i, while Hawaiian males have the highest colon cancer mortality rates (Figure 14). Filipino females have the lowest colon cancer incidence rates (Figure 15). As with colon

## Colorectal Cancer, Hawai'i and U.S.

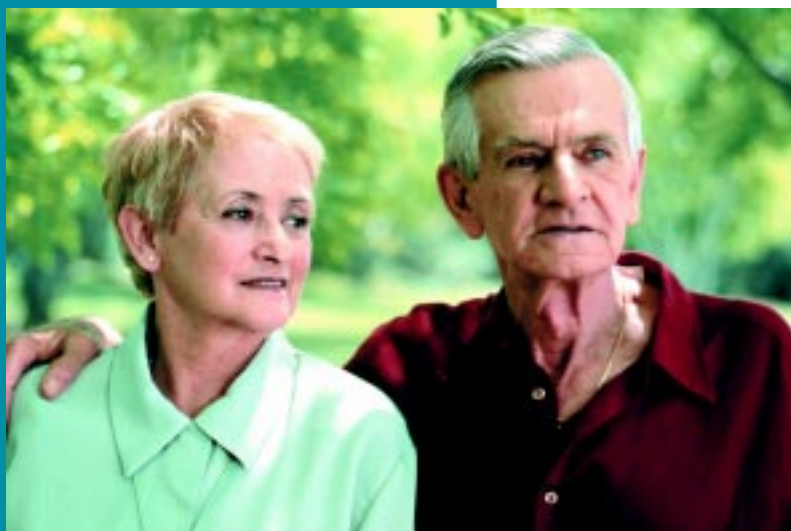
	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	67.6	25.8	48.8	18.0
Hawai'i	67.4	18.3	43.6	11.6

Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Hawai'i data (1995-2000): Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. incidence data (1996-2000) from NAACCR participating registries: Cancer in North America, 1996-2000, North America Association of Central Cancer Registries (NAACCR); U.S. mortality data from statecancerprofiles.cancer.gov, National Cancer Institute (NCI).

cancer, Japanese males have the highest incidence rates for rectum cancers. The rectum cancer rate for this group is 1.1-1.8 times that of men in the other race/ethnic groups. Due to the low number of rectum cancer deaths (<20 in the 6 year time period 1995-2000) among specific race/ethnic groups, rates may be unstable and are

not presented for any but Caucasian males, Japanese males, Japanese females, and all races combined. Differences in incidence rates among different racial/ethnic groups may be due, in part, to dietary and physical activity patterns. In terms of mortality, studies suggest a number of reasons for the disparity, including diagnosis at later stages, when cancer is less likely to be successfully treated.

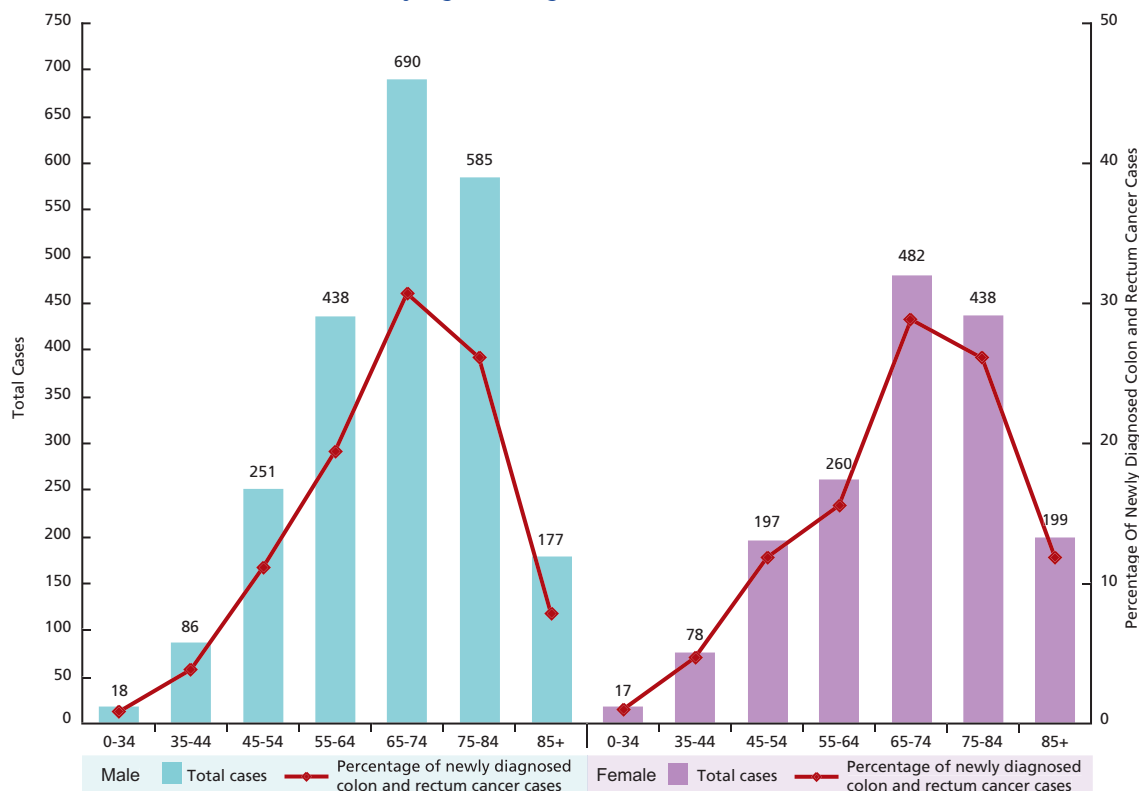
Trends in colorectal cancer incidence and mortality reveal that, overall, for all races combined, rates have dropped over the last 26 years (Figure 16). However, when looking at colon and rectum cancers individually by race/ethnicity, Filipino males show an increase in both colon and rectum cancer incidence rates, but a decline in mortality rates (Table 16). Such increases in incidence probably represent a "catch up" of Filipino males being screened for colorectal cancer. This can be good news as screening can lead to cancers being diagnosed at a very early stage when the disease is most curable.



*For men and women combined, colorectal cancer is the second leading cause of cancer deaths in Hawai'i.*

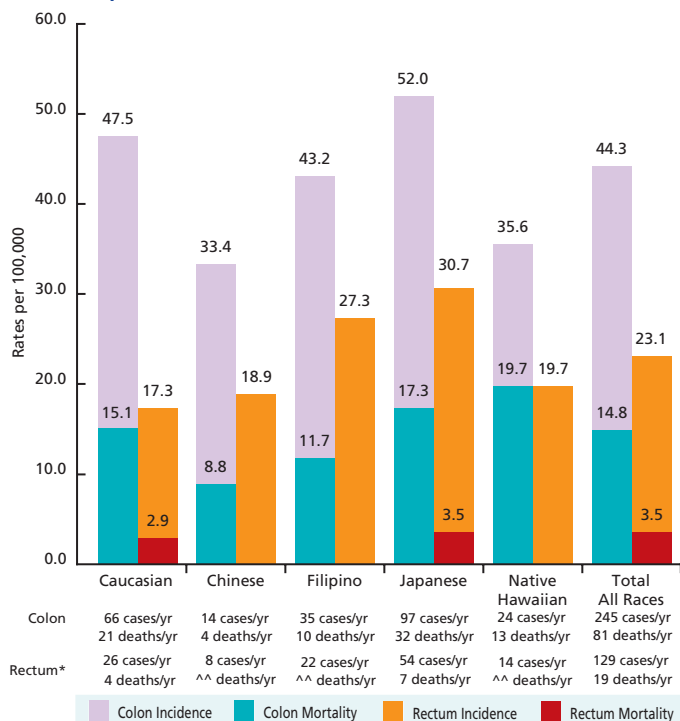


**Figure 13. Colon and Rectum Cancer Incidence by Age of Diagnosis, Hawai'i Residents, 1995-2000**



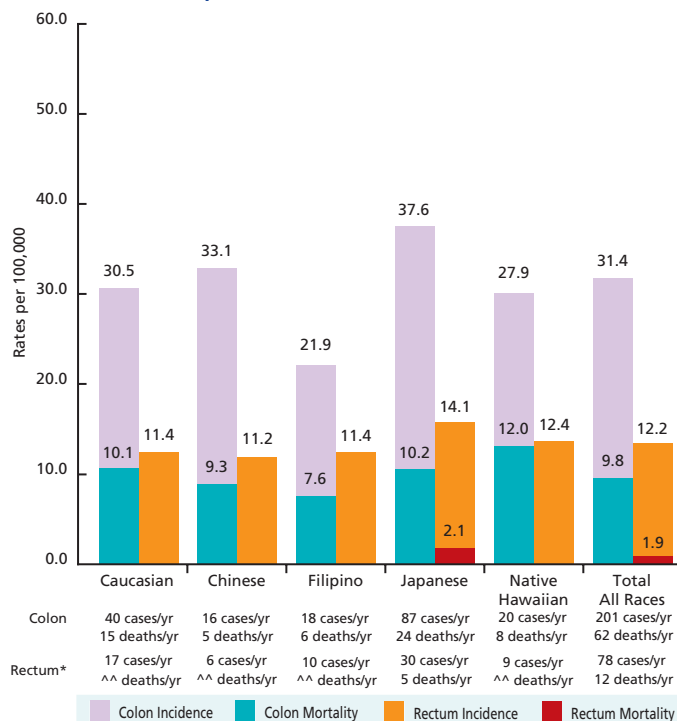
Cases are 6 year totals. Incidence includes invasive cancers only. In situ cases are excluded.  
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 14. Colon and Rectum Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Male Hawai'i Residents, 1995-2000**



\* Rectum excludes anus. ^^ Counts and rates based on small numbers (<20 per time period) are suppressed. Cases and deaths are 6 year average, rounded to the nearest whole.  
Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.  
Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

**Figure 15. Colon and Rectum Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Female Hawai'i Residents, 1995-2000**



\* Rectum excludes anus. ^^ Counts and rates based on small numbers (<20 per time period) are suppressed. Cases and deaths are 6 year average, rounded to the nearest whole.  
Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.  
Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

**Table 16. Trends In Colon and Rectum Cancer Incidence and Mortality Rates by Sex and Race/Ethnicity, Hawai'i, 1975-2000**

COLON	MALES					FEMALES				
	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian
<b>Incidence</b>										
1975-1979	45.9	44.6	35.9	49.3	22.3	40.1	36.7	20.6	29.2	19.7
1980-1984	49.0	40.5	36.3	61.4	37.8	39.3	37.3	22.1	36.9	20.3
1985-1989	55.8	43.8	36.5	60.6	38.9	47.5	35.9	22.2	38.8	25.3
1990-1994	56.1	44.8	35.9	55.8	34.2	40.0	31.4	27.6	35.3	31.3
1995-2000	47.5	33.4	43.2	52.0	35.6	30.5	33.1	21.9	37.6	27.9
<b>Mortality</b>										
1975-1979	17.4	^ ^	22.3	23.6	^ ^	21.6	19.8	^ ^	13.2	^ ^
1980-1984	22.4	24.1	17.8	22.4	14.9	18.6	12.2	^ ^	14.2	14.6
1985-1989	21.0	15.6	22.1	21.2	22.6	20.5	11.7	^ ^	15.1	12.4
1990-1994	21.9	15.8	14.7	21.9	20.5	14.5	14.0	10.2	12.1	13.6
1995-2000	15.1	8.8	11.7	17.3	19.7	10.1	9.3	7.6	10.2	12.0
<b>RECTUM</b>										
<b>Incidence</b>										
1975-1979	22.0	27.8	23.6	33.0	20.8	13.1	13.3	10.1	13.5	12.1
1980-1984	19.9	20.8	22.6	24.5	20.5	15.5	10.4	11.4	13.3	7.7
1985-1989	21.6	22.1	28.9	30.7	20.9	13.6	13.8	12.5	12.8	7.6
1990-1994	20.1	20.2	21.5	26.4	23.2	11.4	11.9	12.4	10.6	11.3
1995-2000	17.3	18.9	27.3	30.7	19.7	11.4	11.2	11.4	14.1	12.4
<b>COLON AND RECTUM</b>										
<b>Incidence</b>										
1975-1979	68.0	72.4	59.5	82.3	43.2	53.2	50.0	30.7	42.8	31.8
1980-1984	68.9	61.3	58.9	85.9	58.4	54.9	47.7	33.5	50.2	28.0
1985-1989	77.3	65.9	65.4	91.4	59.8	61.0	49.7	34.7	51.5	32.9
1990-1994	76.1	65.0	57.3	82.1	57.4	51.3	43.3	40.0	45.9	42.6
1995-2000	64.8	52.3	70.5	82.7	55.3	41.9	44.2	33.3	51.7	40.3
<b>Mortality</b>										
1975-1979	19.4	16.1	30.1	35.2	^ ^	24.5	21.7	11.6	16.4	^ ^
1980-1984	27.6	30.0	21.6	27.9	23.4	20.2	13.2	8.1	16.8	15.7
1985-1989	24.1	19.0	28.1	28.7	29.1	23.8	14.6	9.9	18.4	16.5
1990-1994	27.0	19.3	18.8	27.2	25.3	16.6	17.0	11.6	13.6	15.8
1995-2000	18.0	11.3	15.6	20.8	24.0	11.9	11.2	8.9	12.3	14.0

Note: Colon and rectum cancer excluding anus

Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.

^ ^ Rates based on small numbers (<20 per time period) may be unstable and are not presented.

Trends in rectum mortality not presented due to small numbers (< 20 per time period) in majority of race/ethnic groups (exception: male Caucasian and male/female Japanese).

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

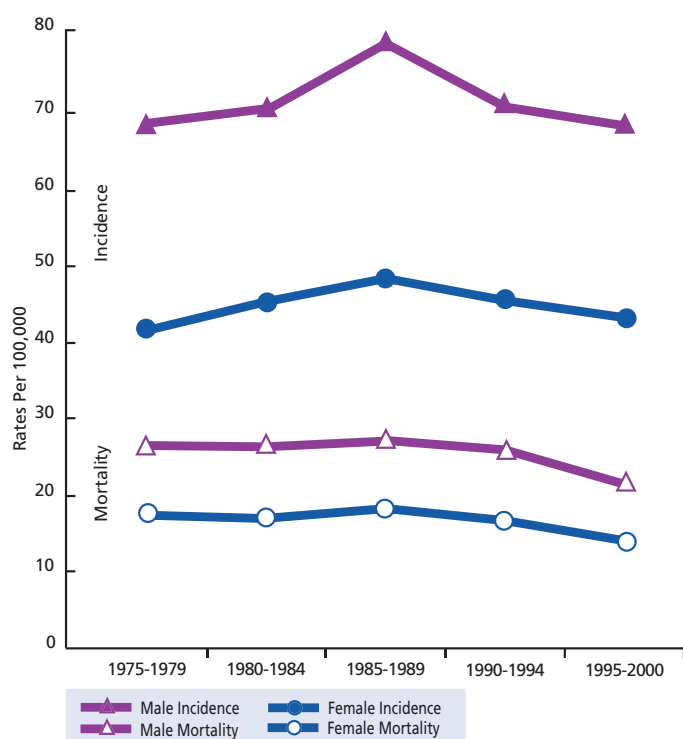
# Colorectal Cancer Prevention, Early Detection and Screening

Approximately 90 percent of all colorectal cancer cases and deaths are thought to be preventable. Screening tests that detect occult blood in the stool or identify adenomatous polyps can prevent the occurrence of colorectal cancers by allowing the detection and removal of pre-cancerous lesions. Potentially modifiable risk factors include healthy dietary patterns, regular physical activity, and avoidance of obesity and smoking. Non-modifiable risk factors include a strong family history of colon cancer or adenomatous polyps. However, almost 75 percent of all colon cancers occur in people with no known predisposing factors.

Survival from colorectal cancer is more than 90 percent when the cancer is diagnosed before it has extended beyond the intestinal wall. On average, only about 44 percent of the close to 3,900 cases of colon and rectum cancers diagnosed in Hawai'i between 1995 and 2000 were diagnosed at an early stage (Table 3).

In a survey of more than 1,800 adults in Hawai'i, half of those surveyed reported ever having a fecal occult blood test (FOBT). Of those, close to 60 percent report having a FOBT in the past year (Table 17). Approximately 50 percent also reported ever having the recommended colorectal screening exams. Of those who had the exam, close to 90 percent stated it was within the past 5 years.

**Figure 16. Trends In Colorectal Cancer Incidence and Mortality Rates, All Races/Ethnicities, Hawai'i, 1975-2000**



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

## Polyp Man colon cancer awareness campaign.



The campaign tone is humorous, but the message is serious: Finding and removing colon polyps through early detection can save lives. Get the test. Get the polyp. Get the cure.

**Table 17. Percentages of Adults 50 and Older in Hawai'i Who Have Had a Recent Fecal Occult Blood Test and Colon and Rectum Exam, 2001**

Demographic Characteristics	Ever Had a Fecal Occult Blood Test %	Fecal Occult Blood Test Within the Past Year * %	Ever Had a Sigmoidoscopy/Colonoscopy %	Sigmoidoscopy/Colonoscopy Within the Past 5 years ** %
<b>TOTAL</b>	<b>50.0</b>	<b>57.6</b>	<b>49.8</b>	<b>89.0</b>
<b>AGE GROUP</b>				
50-54 Years	42.3	46.5	31.1	94.6
55-64 Years	45.4	50.9	49.9	86.2
65-74 Years	56.5	69.4	62.6	90.5
75+ Years	58.1	60.4	53.5	87.7
<b>GENDER</b>				
Male	50.4	55.4	51.8	86.4
Female	49.6	59.5	48.1	91.4
<b>RACE/ETHNICITY</b>				
Caucasian	55.3	50.7	52.9	87.9
Native Hawaiian	35.7	71.8	33.5	80.6
Filipino	37.4	63.5	42.4	98.8
Japanese	55.4	63.4	55.6	90.0
Others	48.8	52.2	50.5	86.6
<b>COUNTY</b>				
Honolulu	51.0	58.6	50.6	89.1
Hawai'i	47.8	49.3	50.5	87.4
Kaua'i	51.8	60.4	46.9	90.4
Maui	44.4	58.9	45.4	89.6

\* Denominator = Those individuals who responded "yes" to ever having a FOBT Statewide, 50.0% of the 1,840 adults aged 50 and older who were surveyed stated they had "ever had" a FOBT; Of this 50%, 57.6 % stated it was within the past year.

\*\* Denominator = Those adults aged 50 and older who responded "yes" to ever having a Sigmoidoscopy or Colonoscopy; Statewide, 49.8% of the 1,834 adults aged 50 and older who were surveyed stated they had "ever had" a sigmoidoscopy/ colonoscopy; Of this 49.8%, 89 % stated it was within the past 5 years.

For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.

Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)

# Lung and Bronchus Cancer

Approximately 650 new cases of lung and bronchus cancer (hereafter referred to as lung cancer) are diagnosed in Hawai'i each year. About 440 residents die from the disease. Lung cancer is the second most common cancer diagnosed among men and third most common among

women in Hawai'i. It is first, however, in the number of cancer-related deaths among both men and women, all racial/ethnic groups combined. Lung cancer, caused primarily from smoking, leads to more deaths every year in Hawai'i than do breast, prostate, and colorectal cancers combined (Figure 3). This is due in part to lung cancer most often being diagnosed at a later stage (Table 3). The risk of lung cancer increases significantly with age. Close to 90 percent of Hawai'i residents who develop lung cancer are age 55 or older at the time of diagnosis (Figure 17).

Sex and race/ethnicity also are factors in lung cancer incidence and mortality rates. Lung cancer incidence and mortality rates among males in Hawai'i are approximately twice that of Hawai'i's females. This is similar to national

## Lung Cancer, Hawai'i and U.S., 1995-1999

	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	91.5	79.5	53.4	40.7
Hawai'i	71.8	50.6	37.6	24.8

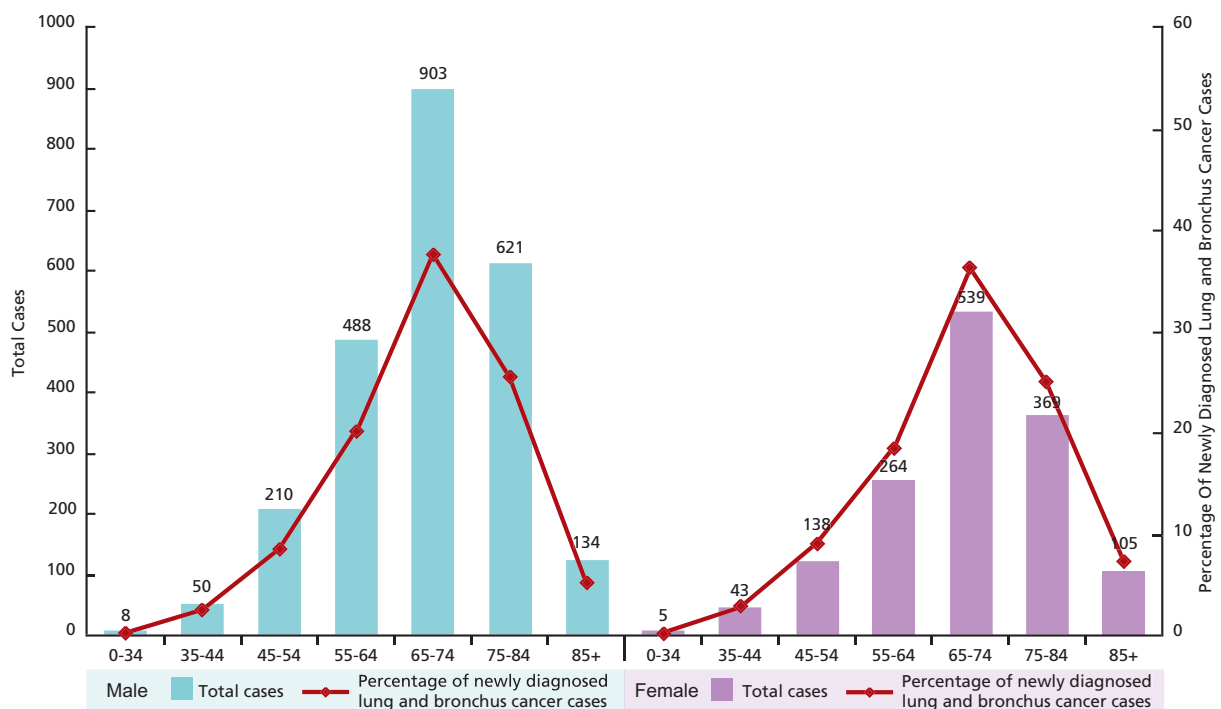
Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Hawai'i data (1995-2000): Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. incidence data (1996-2000) from NAACCR participating registries: Cancer in North America, 1996-2000, North America Association of Central Cancer Registries (NAACCR); U.S. mortality data from statecancerprofiles.cancer.gov, National Cancer Institute (NCI).

trends. Of special note is the disproportionate cancer burden borne by Hawaiian males. Lung cancer mortality rates in Hawaiian males are 1.4 - 1.6 times higher than those of Filipino, Chinese, and Caucasian males, and nearly two times higher than for Japanese males (Figure 18).

Hawaiian females, compared to other females in the state, also experience the highest lung cancer incidence and mortality rates, with mortality rates more than three times higher for Hawaiian females compared to Japanese females (Figure 19).

Twenty-six year time trends provided by the Hawai'i Tumor Registry reveal that, for all race/ethnic groups combined, lung cancer incidence and mortality rates are decreasing for males, but, with the exception of the last 6-year time period, were increasing for females, all race/ethnicities combined (Figure 20). Race-specific trends reveal a pattern of declining incidence and mortality in Caucasian, Hawaiian, and Japanese males, but increasing incidence and mortality in Filipino males, Hawaiian females, and Japanese females (Table 18).

Figure 17. Lung and Bronchus Cancer Incidence by Age of Diagnosis, Hawai'i Residents, 1995-2000



Cases are 6 year totals. Incidence includes invasive cancers only.

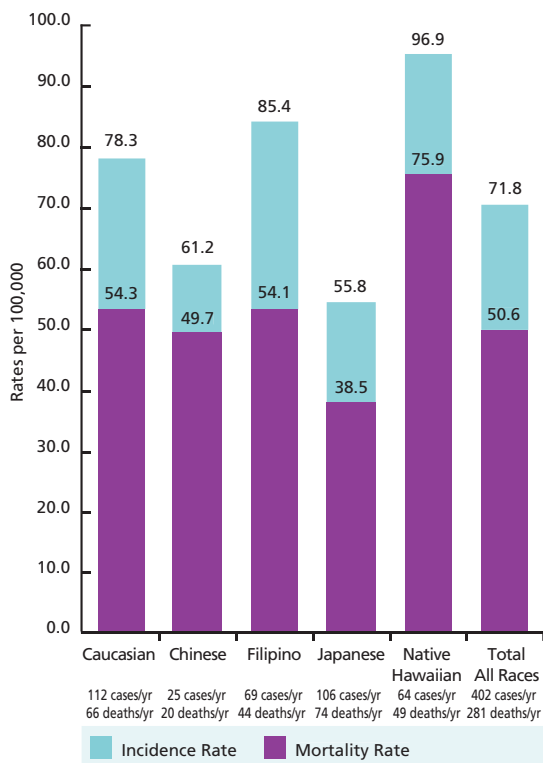
Source: Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

## The National Lung Screening Trial in Hawai'i

Hawai'i is one of 30 sites in the U.S. where the National Cancer Institute is conducting a special research study. The National Lung Screening Trial (NLST) will compare two ways of detecting lung cancer: spiral computed tomography (CT) and standard chest X-ray. The trial began in 2003 and is scheduled to last 8 years, enrolling 50,000 current or former smokers nationwide. In Hawai'i 3,600 people will be enrolled. The American Cancer Society is collaborating with the Cancer Research Center of Hawai'i to help ensure that the NLST reaches full enrollment quickly by supporting promotional and outreach efforts in Hawai'i. The NLST is one of the most important preventive health trials to take place in our lifetime, in that it is attempting to determine whether or not screening for lung cancer can reduce deaths. Lung cancer is the leading cause of cancer death in the world.

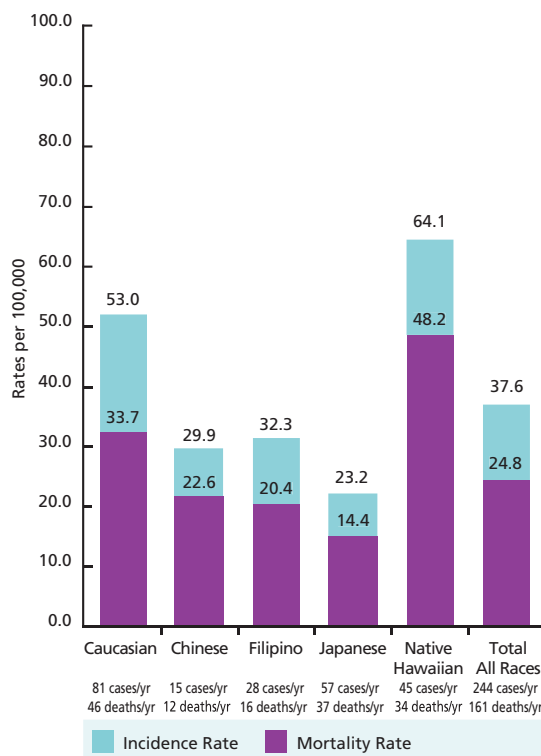


**Figure 18. Lung and Bronchus Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Males, Hawai'i 1995-2000**



Cases and deaths are 6 year average, rounded to the nearest whole. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

**Figure 19. Lung and Bronchus Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Females, Hawai'i, 1995-2000**



Cases and deaths are 6 year average, rounded to the nearest whole. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i



# The Human and Economic Toll of Tobacco Use

Smoking is the most preventable cause of death in our society. However, new estimates from the Centers for Disease Control and Prevention (CDC) detail the human and economic toll tobacco continues to place on Hawai'i. Smoking is responsible for at least 30 percent of all cancer deaths and nearly 90 percent of lung cancers. Smoking is also associated with cancers of the mouth, pharynx, larynx, esophagus, pancreas, cervix, kidney, and bladder. Smoking is a major cause of heart disease, cerebrovascular disease, chronic bronchitis, and emphysema, and is associated with gastric ulcers. In addition, smoking during pregnancy causes about 1,000 infant deaths nationwide each year.

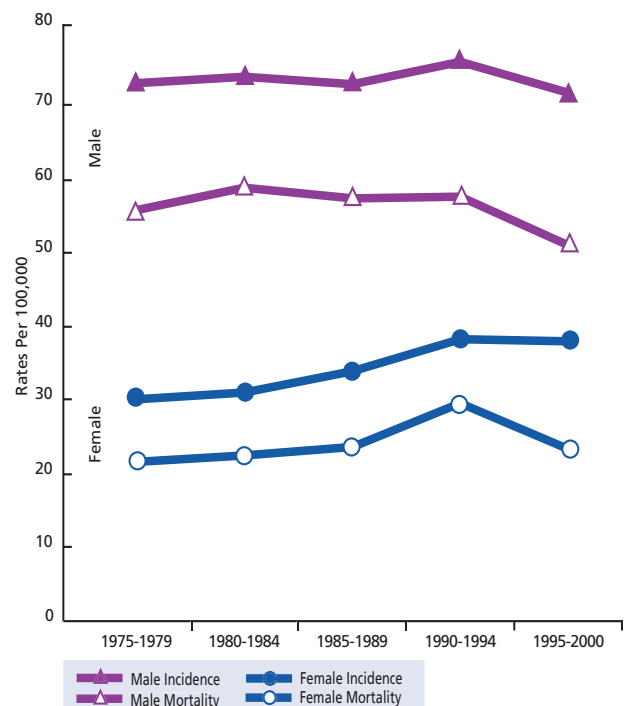
Secondhand smoke, or environmental tobacco smoke (ETS), also contains numerous carcinogens. Nationwide, secondhand smoke causes approximately 3,000 lung cancer deaths and 35,000-45,000 deaths annually from heart disease in nonsmoking adults. Each year, exposure to secondhand smoke causes 150,000 to 300,000 lower respiratory tract infections (such as pneumonia and bronchitis) in U.S. infants and children younger than 18 months of age. Secondhand smoke also increases the number of asthma attacks in 200,000 — 1 million asthmatic children (As published in *Cancer Facts & Figures 2003*, American Cancer Society, National Home Office).

## Everyone pays for tobacco use...

The economic toll tobacco places on Hawai'i is staggering. Direct medical expenditures due to smoking were \$262 million in 1998. Smoking cost the state another \$263 million in lost worker productivity. Overall, each year, tobacco costs the state of Hawai'i more than half a billion dollars. These estimates are attributable to cigarette smoking only, and do not take into account deaths from other causes such as cigar and pipe smoking, smokeless tobacco use, exposure to second hand smoke, and fires. In essence, everyone pays for tobacco use, either with our health, our pocketbooks, or both. The good news is that the state of Hawai'i, using tobacco settlement funds, invests a significant amount of revenue in tobacco prevention and control programs (Centers for Disease Control and Prevention as provided by the Hawai'i Department of Health, Chronic Disease Management and Control Branch, Tobacco Prevention and Education Program).



Figure 20. Trends in Lung and Bronchus Cancer Incidence and Mortality Rates, All Races/Ethnicities, Hawai'i, 1975-2000



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. Standard population.  
Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

## Nationwide trends:

- Nationwide, cigarette smoking among adults aged 18 and over declined 40 percent between 1965 and 1990—from 42 percent to 25 percent. Smoking prevalence among adults showed modest declines between 1993 and 2000.
- Although cigarette smoking became prevalent among men before women, the gender gap narrowed in the mid-1980s and has remained constant.
- Between 1983 and 1999, smoking among college graduates decreased almost 50 percent from 21 percent to 11 percent, but among adults without a high school education the percentage decreased only 22 percent from 41 percent to 32 percent.
- Per capita consumption of cigarettes continues to decline. After peaking at 4,345 cigarettes per capita in 1963, consumption among Americans 18 years and older decreased 53 percent to an estimated 2,037 cigarettes per capita in 2001.

(As published in *Cancer Facts & Figures 2003*, American Cancer Society, National Home Office)

## Hawai'i Trends

- In Hawai'i, cigarette smoking rates among adults age 18 and older have remained relatively stable since 1994, ranging from a 17.9 to 22.2 percent. (Community Health Division, Hawai'i State Department of Health). Recent estimates are that approximately 21 percent of the state's adults are current smokers. Compared to other counties, adult smoking rates are lowest among residents of Honolulu county (Ibid). Rates are higher among Hawaiian/Part Hawaiian adults and individuals with less than a high school education, and among adults with household incomes less than \$15,000 per year (Table 19).
- Hawai'i youth are at risk as well. According to the 2000 Hawai'i Youth Tobacco Survey, on average, approximately 24.5 percent of Hawai'i's public high school students currently smoke cigarettes, defined as smoking cigarettes on one or more of the 30 days preceding the survey (Table 20).

**Table 18. Trends in Lung and Bronchus Cancer Incidence and Mortality Rates by Sex and Race/Ethnicity, Hawai'i 1975-2000**

	MALE					FEMALE				
	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian
<b>Incidence</b>										
1975-1979	98.3	58.4	43.9	62.8	126.6	41.5	25.4	33.7	20.4	48.0
1980-1984	103.1	51.5	44.9	64.5	110.6	47.9	26.8	23.9	15.9	54.4
1985-1989	102.9	48.7	55.5	54.1	114.7	58.3	28.8	23.4	17.1	57.1
1990-1994	95.3	70.5	69.0	55.7	112.5	58.0	36.2	35.1	20.6	58.4
1995-2000	78.3	61.2	85.4	55.8	96.9	53.0	29.9	32.3	23.2	64.1
<b>Mortality</b>										
1975-1979	59.1	45.3	35.1	47.0	43.1	28.7	18.1	19.1	14.2	^ ^
1980-1984	78.3	38.9	37.6	52.3	80.9	33.7	19.7	18.1	12.4	43.0
1985-1989	78.7	36.4	41.8	40.6	105.6	40.1	19.6	14.5	13.9	44.0
1990-1994	65.8	49.6	43.7	42.4	103.0	40.2	30.1	24.9	14.4	46.9
1995-2000	54.3	49.7	54.1	38.5	75.9	33.7	22.6	20.4	14.4	48.2

^ ^ Rates based on small numbers (<20 per time period) may be unstable and are not presented.  
Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population.  
Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

# Tobacco Use in Hawai'i

**Table 19. Percentages of Adults 18 and Older in Hawai'i Who are Current Smokers, 2002**

Demographic Characteristics	Current Smoker Percent
<b>TOTAL</b>	<b>21.0</b>
<b>AGE GROUP</b>	
18-24 Years	30.3
25-34 Years	24.8
35-44 Years	21.4
45-54 Years	23.7
55-64 Years	21.0
65+ Years	7.3
<b>GENDER</b>	
Male	26.1
Female	16.0
<b>RACE/ETHNICITY</b>	
Caucasians	20.6
Native Hawaiian	33.8
Filipino	19.8
Japanese	15.6
Others	19.8
<b>HOUSEHOLD INCOME</b>	
<\$15,000	26.6
\$15,000-24,999	24.2
\$25,000-49,999	20.5
\$50,000-74,999	13.9
>=\$75,000	13.5
Unknown/Refused	25.4
<b>COUNTY</b>	
Honolulu	19.7
Hawai'i	23.5
Kaua'i	24.4
Maui	25.9

For a complete 2001 report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.  
Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2002)

**Table 20. Tobacco Use, High School Students, Hawai'i, 2000**

	Males Percent	Females Percent	Total Percent
<b>Current Cigarette Smoking by Race/Ethnicity</b>			
<b>Total,</b>			
<b>All Races/Ethnicities</b>	<b>23.3</b>	<b>25.5</b>	<b>24.5</b>
Caucasian	29.6	22.2	26.6
Native Hawaiian	22.1	30.6	27.1
Filipino	25.8	30.6	28.8
Japanese	20.8	20.4	20.6
Other	20.8	20.4	22.1
<b>Tobacco Use by Grade</b>			
9th Grade	18.0	19.0	18.5
10th Grade	21.3	24.3	22.8
11th Grade	27.5	29.1	22.8
12th Grade	28.3	31.3	29.8
<b>Current Smokeless Tobacco Use</b>			
Hawai'i	2.0	4.1	2.9

Current Cigarette Smoking defined as smoked cigarettes on 1 or more of the 30 days preceding the survey. Current Smokeless Tobacco Use defined as used chewing tobacco or snuff on 1 or more of the 30 days preceding the survey  
U.S. Source: Youth Tobacco Survey, 2000, Centers for Disease Control and Prevention  
State Source: Youth Tobacco Survey, 2000, Centers for Disease Control and Prevention  
Smokeless Tobacco Source: Youth Risk Behavior Surveillance System, 2001, Centers for Disease Control and Prevention. ATTN: The YRBSS data for this state is not weighted, please use these data with caution.

## Tobacco Advertising and Marketing Expenditures Reach Record Highs

The Federal Trade Commission's annual report on tobacco advertising and promotional expenditures revealed that tobacco marketing reached record highs in 2001. Findings show that spending on the marketing of tobacco products:

- Reached a record \$11.22 billion in 2001
- Increased 17 percent in one year
- Increased more than 66 percent in the first three years after the 1998 state tobacco settlement.

(The FTC report can be found at <http://www.ftc.gov/os/2003/06/2001cigreport.pdf>.)

Approximately 700 cases of invasive prostate cancer are diagnosed in Hawai'i each year. Another 100 men die from the disease. Among males in all racial/ethnic groups but Hawaiian, prostate cancer is the leading type of cancer diagnosed. It is the second leading cause of cancer deaths among Caucasian, Chinese, and Filipino men in Hawai'i (Table 8). Prostate cancer accounts for approximately 27 percent of the cancer incidence and 10 percent of the cancer deaths among males in Hawai'i. Age is the strongest risk factor for prostate cancer. After age 60, prostate cancer incidence and mortality rates rise dramatically in all racial/ethnic groups. About 95 percent of Hawai'i's males who develop prostate cancer are age 55 or older at the time of diagnosis, and more than 75 percent are age 65 or older at the time of diagnosis (Figure 21).

Prostate cancer incidence and mortality rates (new cases and deaths per 100,000 males) are highest among Caucasian males. Incidence rates are lowest among Hawaiian males, while

## Prostate Cancer, Hawai'i and U.S., 1995-1999

Male	Incidence Rate	Mortality Rate
U.S.	160.4	32.9
Hawai'i	127.4	19.9

Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Hawai'i data (1995-2000): Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. incidence data (1996-2000) from NAACCR participating registries: Cancer in North America, 1996-2000, North America Association of Central Cancer Registries (NAACCR); U.S. mortality data from statecancerprofiles.cancer.gov, National Cancer Institute (NCI).

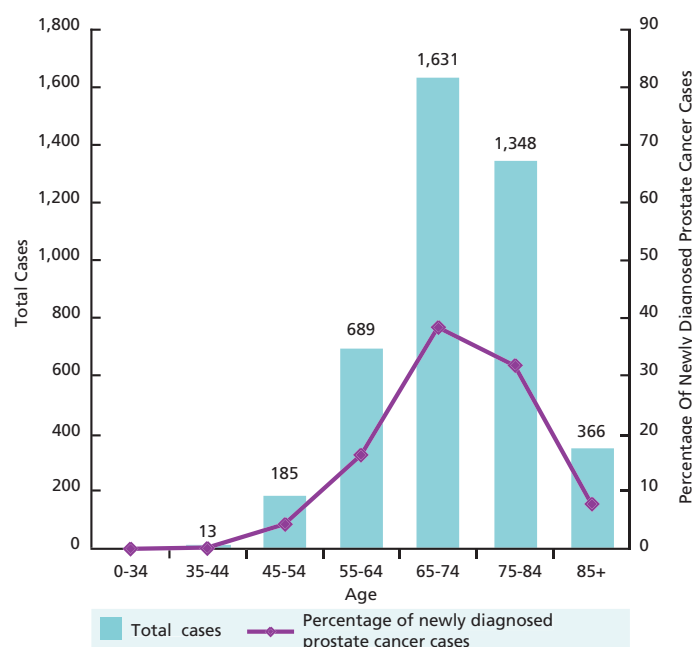
Chinese males have the lowest prostate cancer mortality rates in the state (Figure 22).

Twenty-six year time trends provided by the Hawai'i Tumor Registry shows a pattern of rising incidence and mortality among all racial/ethnic groups until the

mid 1990's (Figure 23). The sharp increases in incidence rates in the late 1980's and early 1990's are due to the adoption of the prostate-specific antigen (PSA) screening test. With the exception of incidence rates among Hawaiian males, both incidence and mortality rates have since declined for all racial/ethnic groups (Table 21).

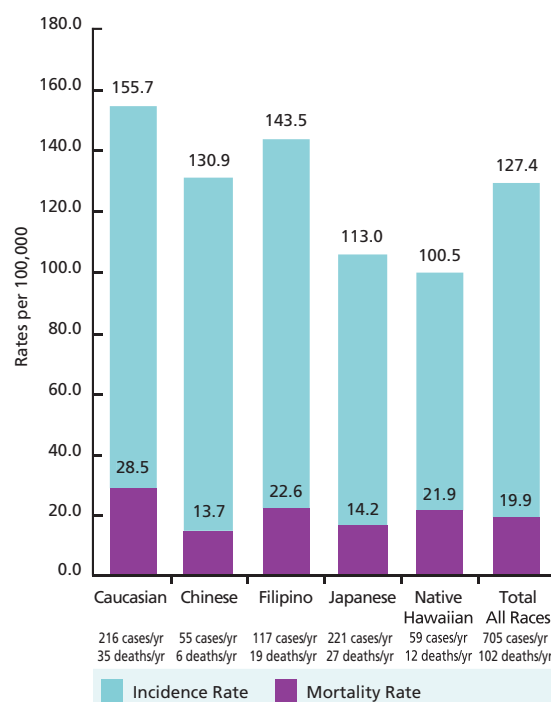
Five-year relative survival trends for prostate cancer have improved dramatically over the last several years. The 5-year relative survival for men diagnosed with prostate cancer in its earliest stages is nearly 100 percent. On average, 76 percent of the prostate cancer cases diagnosed in Hawai'i between 1995-2000 were done so at its earliest stage. State data indicate that Filipino males were least likely to have prostate cancer diagnosed at its earliest stage (Table 3).

**Figure 21. Prostate Cancer Incidence by Age of Diagnosis, Hawai'i Residents, 1995-2000**



Cases are 6 year totals. Incidence includes invasive cancers only. Source: Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Figure 22. Prostate Cancer Incidence and Mortality Counts and Rates by Race/Ethnicity, Hawai'i Residents, 1995-2000**



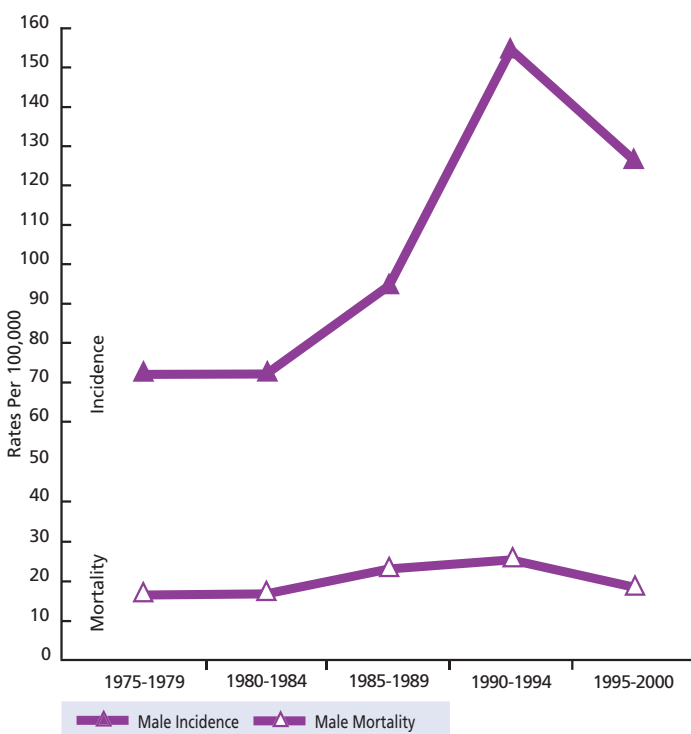
Cases and deaths are 6 year average, rounded to the nearest whole. Rates are per 100,000 population and are age-adjusted to the 2000 U.S. Standard population. Source: Hawai'i Cancer Research Center, Hawai'i Tumor Registry

# Prostate Cancer Early Detection and Screening

According to the American Cancer Society's screening guidelines the prostate-specific antigen (PSA) test and the digital rectal examination (DRE) should be offered annually beginning at age 50 to men who have a life expectancy of at least 10 years. Men at high risk (African-American men and men who have a first-degree relative diagnosed with prostate cancer at a young age) should begin testing at age 45. Unlike many other cancers, prostate cancer often grows slowly. Information regarding potential risks and benefits of early detection and treatment should be given by physicians to their patients, to assist men in making informed decisions about treatment.

In Hawai'i, the 2001 Behavioral Risk Factor Surveillance Survey (BRFSS) revealed that of all men interviewed age 40 and older, nearly 50 percent of all respondents reported ever having a PSA. Of those who had ever had a PSA, nearly 3 out of 4 reported having the test within the past year. Close to 60 percent who had ever had a DRE, reported having done so within the past year (Table 22). Of all men age 50 and older (the target audience for American Cancer Society screening guidelines) who responded to the survey (including both "yes" and "no" to the "ever had" question), 46 percent reported having a PSA test within the past year, while 50 percent reported having a DRE within the past year).

**Figure 23. Trends in Prostate Cancer Incidence and Mortality Rates, All Races/Ethnicities, Hawai'i, 1975-2000**



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

**Table 21. Prostate Cancer Incidence and Mortality Trends by Race/Ethnicity, Hawai'i, 1975-2000**

	Caucasian	Chinese	Filipino	Japanese	Native Hawaiian
<b>INCIDENCE</b>					
1975-1979	98.9	50.8	67.6	66.1	74.7
1980-1984	105.0	59.4	58.6	65.7	74.7
1985-1989	155.4	68.4	86.7	73.6	87.5
1990-1994	203.3	145.8	154.5	141.8	93.8
1995-2000	155.7	130.9	143.5	113.0	100.5
<b>MORTALITY</b>					
1975-1979	29.8	^^	12.0	14.0	^^
1980-1984	32.6	^^	18.5	13.4	17.9
1985-1989	37.3	14.1	24.7	15.7	16.7
1990-1994	34.4	15.7	26.4	18.2	34.8
1995-2000	28.5	13.7	22.6	14.2	21.9

Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. ^^ Rates based on small numbers (<20 per time period) may be unstable and are not presented.

Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

**Table 22. Percentage of Adult Males 40 and Older in Hawai'i Who Have Had a Recent Digital Rectal Exam and Prostate Specific Antigen Test, 2001**

Demographic Characteristics	Ever Had a DRE Percent	DRE Within the Past Year*	Ever Had a PSA Percent	PSA Within the Past Year**
<b>TOTAL</b>	<b>59.0</b>	<b>57.5</b>	<b>48.9</b>	<b>71.1</b>
<b>AGE GROUP</b>				
40-49 Years	36.9	40.9	24.0	56.2
50-59 Years	66.4	55.7	51.9	69.3
60-69 Years	69.7	62.6	69.4	79.1
70+ Years	79.7	68.9	71.5	74.8
<b>RACE/ETHNICITY</b>				
Caucasian	66.9	51.1	56.1	70.4
Native Hawaiian	55.7	56.3	46.8	61.6
Filipino	35.7	55.4	32.5	72.5
Japanese	58.7	68.3	49.6	79.9
Others	58.7	59.9	44.1	64.9

DRE = Digital Rectal Exam

PSA = Prostate Specific Antigen Test

\* Denominator = those who responded "yes" to ever having a DRE. Statewide, 59% of those surveyed responded "yes" to ever having a DRE. Of those 59%, 57.5% report having a DRE within the past year

\*\* Denominator = those who responded "yes" to ever having a PSA. Statewide, 48.9% of those surveyed responded "yes" to ever having a PSA. Of those 48.9%, 71.1% report having a PSA within the past year.

For a complete report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.

Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)



# Skin Cancer (Melanomas of the Skin)

Approximately 180 new cases of melanoma of the skin are diagnosed in Hawai'i each year. On average, 17 Hawai'i residents will die from the disease. Skin cancer of all types is associated with exposure to the sun.

Melanoma is much less common than basal cell and squamous cell skin cancers, but it is far more serious. Our state's intense year-round sunshine puts our citizens, especially those who have fair skin and/or who work or spend a great deal of recreational time in the sun, at greater risk of melanoma. Age is another factor associated with melanoma incidence and mortality rates. Although melanoma is rare in children, incidence increases beginning in the early teenage years and continues to increase with advancing age (Figure 24).

Race/ethnicity is the leading factor in all skin cancers, including melanoma. Melanoma is primarily a disease of Caucasians (Figure 25). Caucasian males have melanoma skin

## Melanomas of the Skin Cancer, Hawai'i and U.S., 1995-1999

	MALE		FEMALE	
	Incidence Rate	Mortality Rate	Incidence Rate	Mortality Rate
U.S.	19.0	3.9	12.0	1.8
Hawai'i	20.5	1.9	10.3	1.0

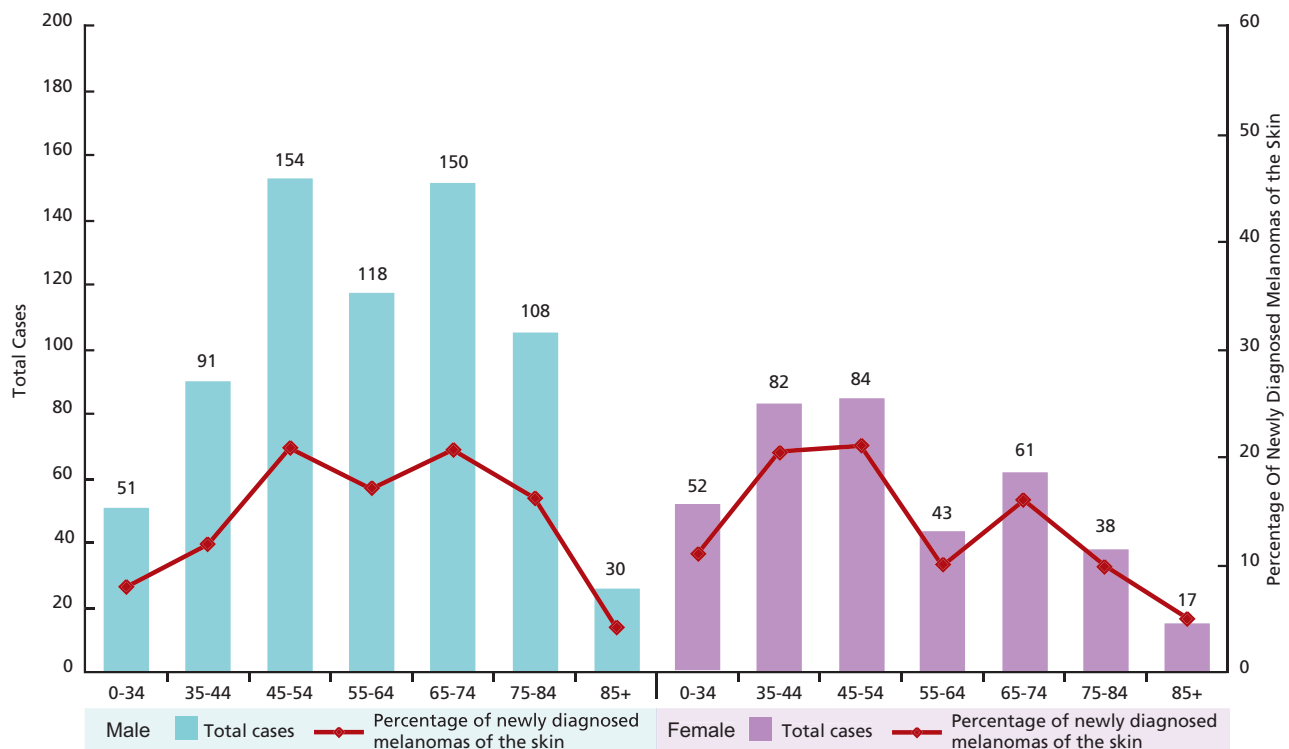
Rates are per 100,000 and are age-adjusted to the 2000 U.S. standard population. Hawai'i data (1995-2000): Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i; U.S. incidence data (1996-2000) from NAACCR participating registries: Cancer in North America, 1996-2000, North America Association of Central Cancer Registries (NAACCR); U.S. mortality data from statecancerprofiles.cancer.gov, National Cancer Institute (NCI).

cancer incidence rates double those of Caucasian females and more than twenty times higher than incidence rates of Japanese, Hawaiian, and Filipino males. Deaths from melanoma of the skin also are higher for Caucasians males and females compared to all other racial/ethnic groups in the state. In the six-year period from 1995 to 2000, Caucasian

males and females were the only race/ethnic group in Hawai'i to have more than 10 deaths due to melanoma.

Although melanomas of the skin ranks fifth in the ten leading cancer sites among males (representing less than five percent of total cancer cases) and ranks tenth in the ten leading cancer sites among females in Hawai'i, it remains a significant concern because incidence of melanoma is rising faster than any other cancer in the U.S. In Hawai'i, melanoma cancer incidence rates have risen dramatically among Caucasians — especially Caucasian males, while remaining low in all other racial/ethnic groups (Figure 26).

Figure 24. Melanomas of the Skin by Age of Diagnosis, Hawai'i Residents, 1995-2000



Cases are 6 year totals. Incidence includes invasive cancers only.

Source: Source: Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

# Skin Cancer Prevention, Early Detection And Screening

**B**listering sunburn in childhood and adolescence is an almost universal risk factor for melanoma in Caucasian populations. Other risk factors that may contribute to the development of skin cancer include:

- Excessive exposure to UV radiation.
- Fair to light skin complexion.
- Gender (men are more likely to develop skin cancer than women).
- Age (about 50 percent of melanomas occur in people over the age of 50).
- Race (risk of melanoma is more than 20 times higher for Caucasians than for African Americans).
- Heredity (numerous moles, as well as certain types of high-risk moles, often run in families).
- Occupational exposure to coal tar, pitch, creosote, arsenic compounds, or radium.

## Actions to take to help prevent skin cancers are:

- Limit or avoid the sun between 10:00 a.m. and 4:00 p.m.
- When outdoors, cover as much skin as possible.
- Wear a hat that shades the face, neck, and ears.
- Wear sunglasses to protect the skin around the eyes.
- Use sunscreens with SPF 15 or greater.
- Protect children from sun exposure.

Melanoma, detected early, is likely to be completely cured. Part of a routine cancer-related checkup should include a skin examination by a health care professional qualified to diagnose skin cancer. The five-year relative survival from melanoma is close to 96 percent when the cancer is diagnosed at an early

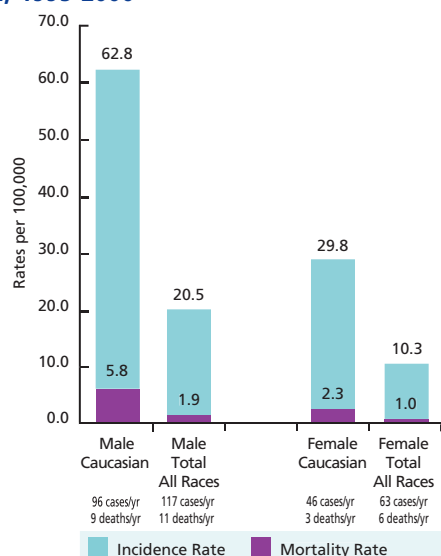


stage. Between 1995 and 2000, more than 88 percent of the melanomas of the skin diagnosed among Caucasians in the state were early stage (Table 3).

## A simple ABCD rule outlines the warning signals for melanoma:

- A** Asymmetry of mole (one side does not match the other);
- B** Border irregularity (edges are ragged, notched, or blurred);
- C** Color (pigmentation is not uniform, with variable degrees of tan, brown, or black);
- D** Diameter (the size is greater than 6 millimeters, and any sudden or progressive increase in size should be of concern).

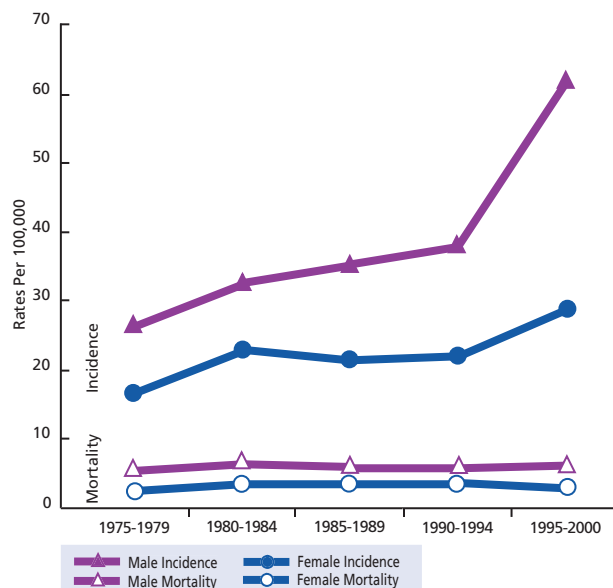
**Figure 25. Melanomas of the Skin Incidence and Mortality Counts and Rates, Caucasians and all Races/Ethnicities, Hawai'i, 1995-2000**



Cases and deaths are 6 year average, rounded to the nearest whole.

Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

**Figure 26. Trends in Melanomas of the Skin Incidence and Mortality Rates, Caucasians, Hawai'i, 1995-2000**



Rates are per 100,000 population and are age-adjusted to the 2000 U.S. standard population. Source: Hawai'i Tumor Registry, Hawai'i Cancer Research Center, University of Hawai'i

The American Cancer Society is dedicated to reducing the risk of cancer by encouraging the maintenance of health-promoting lifestyles. Researchers estimate that up to two-thirds of all cancers can be prevented. Research also tells us that healthy behavior is based not only on knowledge, but also on values, attitudes, and skills developed early in life. It is these formative years that offer parents, the community, and institutions a valuable opportunity to influence the development of healthy behaviors in children. That's why the American Cancer Society advocates for community-supported school-based health education programs that are sequential in grades K-12, are age appropriate, have parental input, involve the community, and are supported by schools. Such quality health education programs for our youth are one of the most effective ways of instilling lifelong health habits that protect against cancer.

## Opportunities in School Health Education

In 1999 the Hawai'i State Department of Education implemented the Hawai'i Content and Performance Standards in Health Education. The Department of Health has funded the implementation of standards-based health education, physical education, and the coordinated school health programs with tobacco settlement funds since 2000 as a strategy for reducing the burden of chronic disease. The new standards require that our children learn and practice behaviors for healthy lives today and for the future. Our schools provide the most efficient and effective means of reaching our children. The partnership that has been formed between the Department of Education, Department of Health, the University of Hawai'i College of Education, the American Cancer Society, Meadow Gold Dairies, Inc. and other organizations is providing professional development opportunities for classroom teachers, technical assistance, resources and has an evaluation component.<sup>1</sup>

In 2002, the School Health Education Profile Report (SHEP) indicated that more than 90 percent of lead health education teachers surveyed in Hawai'i's secondary schools are teaching to increase students' skills. These teachers are using new

teaching methods to engage youth in an interactive learning process. The lead teachers also reported receiving professional development in the new standards.<sup>2</sup>

While these figures are encouraging, there is still much work to do. Health education after elementary school is usually only covered again in grades 7 and 10. Only 9 percent of lead health education teachers surveyed had health education as their major area of professional preparation. Physical education is usually covered in grade 7 and then is a 1/2 credit requirement for graduation. Among Hawai'i's high school youth, about 25 percent currently use tobacco, 79 percent did not consume the recommended 5 servings of fruits and vegetables per day, and 36 percent did not engage in vigorous physical activity the week prior to the survey.<sup>3,4</sup> Support for health education and physical education needs to continue. Hawai'i is developing an infrastructure to support the coordination of school health programs through a cooperative agreement with the Center for Disease Control and Prevention as a funded Comprehensive School Health Program partner. Children who are healthy and engaged in school are more likely to attain their educational outcomes. The partners are working together for the future of our children.



***In Hawai'i, nearly 1 of every 10 high school students is obese, while another 16 percent are at risk for becoming overweight. Support for health education and physical education in schools can play an important role in reversing these unhealthy trends.***

## References:

1. Pateman, B, Irvin, L, Nakasato, Serna, K, Yahata, D. *Got Health? The Hawai'i Partnership for Standards-Based Health Education*. JOSH. 2000; 70:8; 311-317.
2. Pateman, B. 2002 School Health Education Profile Report. Honolulu, HI: HI Dept of Education; Spring 2003.
3. Youth Risk Behavior Surveillance System, 1999, Centers for Disease Control and Prevention.
4. Youth Tobacco Survey, 2000, Centers for Disease Control and Prevention.



# Nutrition, Physical Activity, Obesity and Cancer

Approximately one-third of the cancer deaths that occur in the United States each year are due to nutrition and physical activity factors, including obesity. For the majority of Americans who do not use tobacco, dietary choices and physical activity are the most important modifiable cancer risk factors. Cancer risk can be reduced by an overall nutrition plan that includes mostly plant foods (fruits, vegetables, grains, and beans) and a balance between food intake and physical activity. Physical activity also promotes overall health and can help protect against some cancers, including colon cancer and breast cancer.

Evidence indicates that although inherited genes do influence cancer risk, the majority of the variation in cancer risk among populations and among individuals is due to behavioral factors such as cigarette smoking, certain dietary patterns, and physical inactivity. The introduction of a healthy diet and regular physical activity at any time from childhood to old age can promote health and impact cancer risk.

Unfortunately, Hawai'i adults are far from reaching the American Cancer Society guidelines on nutrition, physical activity, and weight control (Table 23). Fewer than one in four adults interviewed as part of the 2001 Behavioral Risk Factor Surveillance System reported eating an average of five or more servings of fruits and vegetables per day. The percentage was lower among males and among Japanese residents. In addition to concerns about proper nutrition, not all Hawai'i residents are complying with recommendations for daily physical activity or even participating in leisure time physical activity. The increasing number of overweight individuals in the state is related to poor nutritional habits and physical inactivity. Based on height to weight measures (known as body mass index or BMI), about 50 percent of Hawai'i's adults were considered

overweight or obese (Table 23). Many high school age youth in Hawai'i are also at risk due to inadequate intake of fruits and vegetables, lower than recommended physical activity levels, and higher than recommended body weights for heights (Table 24).

## Health Promotion Guidelines

1. Eat a variety of healthful foods, with an emphasis on plant sources.
  - Eat five or more servings of vegetables and fruit each day.
  - Choose whole grains in preference to processed (refined) grains and sugar.
  - Limit consumption of red meats, especially high fat and processed meats.
  - Choose foods that help maintain a healthful weight.
2. Adopt a physically active lifestyle.
  - Adults: Engage in at least moderate activity for 30 minutes or more on 5 or more days of the week.
  - Children and adolescents: Engage in at least 60 minutes per day of moderate-to-vigorous physical activity at least 5 days per week.
3. Maintain a healthful weight throughout life.
4. If you drink alcoholic beverages, limit consumption.
  - People who drink alcohol should limit their intake to no more than 2 drinks per day for men and 1 drink a day for women.

## Obesity Linked to Increased Cancer Deaths

According to findings in a landmark study from the American Cancer Society,\* excess body weight may contribute to more than 90,000 cancer deaths in the U.S. each year. In the largest study ever done on the link between obesity and cancer, researchers followed more than 900,000 adults for 16 years. Findings revealed that overweight and obese men and women had a greater risk of death from cancers of the esophagus, colon, rectum, liver, gallbladder, pancreas, and kidney, non-Hodgkin's lymphoma, and multiple myeloma. Men who were overweight or obese also had an increased risk of dying from cancer of the stomach and prostate, while overweight or obese postmenopausal women had an increased risk of death from cancers of the breast, cervix, ovaries, and uterus. Top researchers in both cancer and obesity said that the research virtually proves that cancer and obesity are linked.

\*Calle, EE, Rodriquez, C, Walker-Thurmond, K, and Thun, M (2003). Overweight, Obesity, and Mortality from Cancer in a Prospectively Studied Cohort of U.S. Adults. *The New England Journal of Medicine*. Vol. 3438, 1625-1638, April 24, 2003.



**Table 23. Nutrition, Physical Activity, and Overweight Status, Adults 18 and Older, Hawai'i 2001**

Demographic Characteristics	Eating 5 or More Fruits & Vegetables Per Day (%)	Participating In Moderate Physical Activity* (%)	Overweight** (%)	Obese*** (%)
<b>TOTAL</b>	<b>21.6</b>	<b>50.2</b>	<b>33.5</b>	<b>17.9</b>
<b>AGE GROUP</b>				
18-24 Years	18.2	58.1	23.2	17.4
25-34 Years	19.6	53.8	35.1	19.6
35-44 Years	16.8	51.2	35.1	20.0
45-54 Years	21.6	50.3	35.0	19.8
55-64 Years	24.1	46.4	38.3	19.3
65+ Years	29.5	42.4	31.0	11.0
<b>GENDER</b>				
Male	18.8	56.2	42.1	19.5
Female	24.4	44.1	24.5	16.2
<b>RACE/ETHNICITY</b>				
Caucasian	24.3	60.2	31.8	15.7
Native Hawaiian	17.2	50.9	33.8	35.2
Filipino	23.8	41.4	35.1	14.9
Japanese	16.6	42.0	34.6	10.9
Others	23.4	47.6	33.8	19.9
<b>HOUSEHOLD INCOME</b>				
<\$15,000	19.4	40.3	25.9	25.9
\$15,000-24,999	27.2	53.7	27.8	26.5
\$25,000-49,999	19.1	50.9	36.0	16.7
\$50,000-74,999	18.4	50.8	34.7	16.1
>=\$75,000	26.3	56.1	37.5	15.7
Unknown/Refused	21.4	48.2	33.3	14.9
<b>COUNTY</b>				
Honolulu	21.5	50.2	33.1	18.1
Hawai'i	21.5	47.8	33.5	20.7
Kaua'i	19.8	45.7	35.2	16.1
Maui	23.1	55.6	35.0	14.1

Percentage at 95% C.I. = Confidence Interval at 95 percent probability level.

Percentages are weighted to population characteristics.

For a complete 2001 report, including confidence interval ranges at 95% probability, visit the Hawai'i Department of Health website, 2001 State of Hawai'i Behavioral Risk Factor Surveillance Report.

\* Moderate Physical Activity is defined as at least 30 minutes a day, 5 days a week of moderate intensity, or at least 20 minutes a day, 3 days a week.

\*\* Overweight defined as body mass index (BMI) of 25 -29 kg/m<sup>2</sup>;

\*\*\* Obese defined as body mass index (BMI) of greater than 30 kg/m<sup>2</sup>

Source: Hawai'i State Department of Health, Community Health Division, Behavioral Risk Factor Surveillance System, U.S. Centers for Disease Control and Prevention (2001)

**Table 24. Nutrition, Physical Activity, and Overweight Status, High School Students, Hawai'i 1999**

	Eating 5 or More Fruits & Vegetables Per Day (%)	Participating In Moderate Physical Activity (%)	Participating In Vigorous Physical Activity (%)	At Risk For Becoming Overweight (%)	Overweight (%)
<b>Total</b>	<b>21.1</b>	<b>20.3</b>	<b>64.0</b>	<b>16.3</b>	<b>9.0</b>
<b>Male</b>	<b>21.9</b>	<b>22.7</b>	<b>74.8</b>	<b>20.4</b>	<b>11.1</b>
<b>Female</b>	<b>20.6</b>	<b>18.3</b>	<b>54.8</b>	<b>12.6</b>	<b>7.0</b>

*Moderate Physical Activity* defined as activities that did not cause sweating and hard breathing (such as fast walking) for 30 minutes or more on 5 or more of the 7 days preceding the survey

*Vigorous Physical Activity* defined as activities causing sweating or hard breathing (such as running) for 20 minutes or more on 3 or more of the 7 days preceding the survey  
*At Risk for Becoming Overweight* defined as students who were at or above the 85th percentile but below the 95th percentile for body mass index by age and sex based on reference data from the National Health and Nutrition Examination Survey  
*Overweight* defined as students who were at or above the 95th percentile for body mass index by age and sex based on reference data from the National Health and Nutrition Examination Survey

Source: Youth Risk Behavior Surveillance System, 1999, Centers for Disease Control and Prevention





# Environmental Cancer Risks

**E**nvironmental factors, defined broadly to include smoking, diet, and infectious diseases as well as chemicals and radiation, cause an estimated three-quarters of all cancer deaths in the United States. Among these factors, tobacco use, unhealthy diet, and physical inactivity have a greater affect on individual cancer risk than do trace levels of pollutants in food, drinking water, and air. However, the degree of risk from pollutants depends on the concentration, intensity, and duration of exposure. Even low-dose exposures that pose only small risk to individuals can still

cause substantial ill health across an entire population if the exposures are widespread. For example, secondhand tobacco smoke increases risk in large numbers of people who do not smoke but are exposed to others' smoke.

## Risk Assessment

The risk assessment process evaluates the cancer-causing

potential of a substance, the levels of the substance in the environment, and the extent to which people are actually exposed. For cancer safety standards, acceptable risks are usually limited to those that increase risk by no more than one case per million persons over a lifetime.

## Chemicals

Various chemicals (for example, benzene, asbestos, vinyl chloride, arsenic, aflatoxin) show definite evidence of causing cancer in humans; others are considered probable human carcinogens based on evidence from animal experiments (for example, chloroform, dichlorodiphenyl-trichloroethane [DDT], formaldehyde, polychlorinated biphenyls [PCBs], and polycyclic aromatic hydrocarbons. For some exposures (asbestos and radon), the risks are greatly increased when combined with tobacco smoking.

## Radiation

The only types of radiation proven to cause human cancer are high-frequency ionizing radiation (IR) and ultraviolet (UV) radiation. Exposure to sunlight (UV radiation) causes almost all cases of basal and squamous cell skin cancer and is a major cause of melanoma of the skin. Disruption of the earth's ozone layer by pollution (the "ozone hole") may cause rising levels of UV radiation.

Radon exposures in homes can increase lung cancer risk, and cigarette smoking greatly increases the effect of radon exposure in lung cancer risk.

## Unproven Risks

Public concern about cancer risks in the environment often focuses on unproven risks or on situations in which known carcinogen exposures are at such low levels that risks are negligible, for example:

**Pesticides.** High doses of some pesticides (insecticides, herbicides, etc.) have been shown to cause cancer in animals, but the very low concentrations found in some foods have not been associated with increased cancer risk. Continued research regarding pesticide use is essential for maximum food safety, improved food production through alternative pest control methods, and reduced pollution of the environment.

**Non-ionizing radiation.** Electromagnetic radiation at frequencies below ionizing and ultraviolet levels has not been proven to cause cancer. Low-frequency radiation includes radiowaves, microwaves, radar, and power frequency radiation arising from the electric and magnetic fields associated with electric currents, cellular phones, and household appliances.

**Toxic wastes.** Toxic wastes in dump sites can threaten human health through air, water, and soil pollution. Clean-up of existing dump sites and close control of toxic materials in the future are essential to ensure healthy living conditions.

**Nuclear power plants.** Ionizing radiation emissions from nuclear facilities are closely controlled and involve negligible levels of exposure for communities near the plants. Reports about cancer case clusters in such communities have raised public concern, but studies show that clusters do not occur more often near nuclear plants than they do by chance elsewhere.

Additional information on environmental factors associated with cancer risks can be found at several Web sites, including [www.atsdr.cdc.gov](http://www.atsdr.cdc.gov), [www.epa.gov](http://www.epa.gov), [www.niehs.nih.gov](http://www.niehs.nih.gov), [www.osha.gov](http://www.osha.gov), and [www.who.int](http://www.who.int).

The above is excerpted from *Cancer Facts & Figures 2003*, American Cancer Society, Inc., Atlanta, GA. Full text is available on the American Cancer Society Web site [www.cancer.org](http://www.cancer.org)



# American Cancer Society Recommendations for Early Detection of Cancer\*

SITE	RECOMMENDATION
<b>Breast (Female)</b>	<p>Yearly mammograms starting at age 40 and continuing for as long as the woman is in good health. Clinical breast exams (CBE) should be part of a periodic health exam, about every three years for women in their 20s and 30s, and every year for women 40 and older. Women should report any breast changes promptly to their health care providers. Breast self-examination (BSE) is an option for women starting in their 20s. Women at increased risk (i.e. family history, genetic testing, prior breast cancer) should speak with their doctors about starting screenings earlier, having additional tests, or having more frequent exams.</p>
<b>Colon and Rectum</b>	<p>Beginning at age 50, men and women should follow one of the examination schedules below:</p> <ul style="list-style-type: none"> <li>■ A fecal occult blood test (FOBT) every year,</li> <li>■ A flexible sigmoidoscopy (FSIG) every five years,</li> <li>■ Annual fecal occult blood test and flexible sigmoidoscopy every five years **</li> <li>■ A double-contrast barium enema every 5 to 10 years</li> <li>■ A colonoscopy every 10 years</li> </ul> <p><i>**Combined testing is preferred over either annual FOBT or FSIG every 5 years, alone. People who are at moderate or high risk of colorectal cancer should talk with a doctor about a different testing schedule.</i></p>
<b>Prostate</b>	<p>The Prostate Specific Antigen (PSA) blood test and the digital rectal examination (DRE) should be offered annually, beginning at age 50, to men who have a life expectancy of at least 10 years. Men at high risk, such as African Americans and men with a strong family history of one or more first-degree relatives (father, brother, son) diagnosed with prostate cancer at an early age should begin testing at age 45. Information should be provided to patients about what is known and what is uncertain about the benefits and limitations of early detection and treatment of prostate cancer, so that patients can make an informed decision.</p>
<b>Uterus</b> <b>Cervix:</b>  <b>Endometrium:</b> <b>(Corpus Uteri)</b>	<p>Screening should begin approximately three years after a woman begins having vaginal intercourse, but no later than 21 years of age. Screening should be done every year with regular Pap tests or every two years using liquid-based tests. At, or after age 30, women who have had three normal test results in a row may get screened every 2-3 years. However, doctors may suggest a woman get screened more often if she has certain risk factors, such as HIV infection or a weak immune system. Women 70 years and older who have had three or more consecutive normal Pap tests in the last 10 years may choose to stop cervical cancer screening. Screening after a total hysterectomy (with removal of the cervix) is not necessary unless the surgery was done as a treatment for cervical cancer.</p> <p>The American Cancer Society recommends that all women should be informed about the risks and symptoms of endometrial cancer, and strongly encouraged to report any unexpected bleeding or spotting to their physicians. Annual screening for endometrial cancer with endometrial biopsy beginning at age 35 should be offered to women with, or at risk for, hereditary nonpolyposis colon cancer (HNPCC).</p>
<b>Cancer-related Checkup</b>	<p>For individuals undergoing periodic health examinations, a cancer-related checkup should include health counseling and, depending on a person's age, might include examinations for cancers of the thyroid, oral cavity, skin, lymph nodes, testes, and ovaries, as well as for some nonmalignant diseases.</p>

The American Cancer Society guidelines for early detection are assessed annually in order to identify whether there is scientific evidence to warrant a re-evaluation of current recommendations. If new evidence is sufficiently compelling to consider a change or clarification in a current guideline, or the development of a new guideline, a formal procedure is initiated. Guidelines are formally evaluated every 5 years, regardless of whether or not new evidence suggests a change in the existing recommendations.

\*In Asymptomatic People.

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Note: The National Cancer Institute's (NCI) screening recommendations may differ from those of the American Cancer Society. For information regarding the NCI's screening recommendations, visit their website at <http://cancer.gov/> or call the NCI's Cancer Information Service at 1-800-4-CANCER.

# Major Cancer Sites

CANCER SITES	NON-MODIFIABLE RISK FACTORS	MODIFIABLE RISK FACTORS	RISK REDUCTION
<b>Brain and other nervous system</b>	Impaired immune system that may be present at birth, a side effect of treatment from other cancers, a side effect of treatment to prevent transplanted organ rejection, or from acquired immunodeficiency syndrome (AIDS); Family history	Exposure to radiation	Prevention strategies are not available since most brain and other nervous system tumors are not associated with known risk factors and occur for no apparent reason
<b>Breast</b>	Age (risk increases as one gets older); Gender (risk higher in women); Race (risk slightly higher in Whites); Genetic risk factors; Family history; Personal history of breast cancer; Previous breast biopsy; Previous breast radiation; Early menstruation; Late menopause	First child born after age 30; Oral contraceptive use; Hormone replacement therapy use; Alcohol consumption; Obesity; Physical activity	Having first child before age 30; Breast feeding child; Limit alcohol consumption; Maintain a healthy weight; Be physically active; Chemoprevention if women are considered high risk (tamoxifen and possibly raloxifene-raloxifene is not approved for risk reduction and should not be recommended outside of a clinical trial.)
<b>Cervix</b>	Age (average age at diagnosis is 50 to 55); Family history	Human papillomavirus (HPV) infection from intercourse at an early age, unprotected sex, and many sexual partners; Cigarette smoking; Human immunodeficiency virus (HIV) infection; Chlamydia infection	Avoid early onset of sexual activity; Limit number of sexual partners; avoid sexual intercourse with individuals who have had multiple partners; Avoid cigarette smoking; Use condoms (to prevent HIV and chlamydia infection; condom use does not reliably prevent HPV infection)
<b>Colon and Rectum</b>	Age (risk increases as one gets older); Family history; Ethnicity, namely Ashkenazi Jews; Race (highest incidence in African Americans); Personal history of colon cancer, intestinal polyps, or chronic inflammatory bowel disease	Diet from animal sources; Physical inactivity; Obesity; Smoking; Alcohol consumption; Vegetable and fruit consumption; Hyper-insulinemia/Type II Diabetes	Follow American Cancer Society guidelines on nutrition and physical activity; Maintain ideal body weight; multivitamin with folate intake; Calcium supplement intake; Nonsteroidal anti-inflammatory drugs, like aspirin; Hormone replacement therapy (but side effects may outweigh benefit)—ACS does not recommend that people at average risk use NSAIDs or HRT for the purpose of lowering CRC risk.
<b>Endometrium (Corpus Uteri)</b>	Age (risk increase as one gets older); Total length of menstrual span; Early menstruation; Late menopause; History of infertility; Ovarian disease; Diabetes; Family history; Presence or personal history of breast or ovarian cancer	History of having never given birth; Obesity; Tamoxifen use; Estrogen (but not combined hormone) replacement therapy; Diet high in animal fat	Having one or more children; Use of oral contraceptives; Maintain healthy weight; Control diabetes
<b>Hodgkin's Disease</b>	None known at present, but there is a slightly increased rate of Hodgkin's disease among persons previously infected with infectious mononucleosis	None known at present	None known at present
<b>Kidney (Renal Cell)</b>	Age (risk increases as one gets older); gender (risk higher in men); Inherited conditions such as von Hippel-Lindau disease, hereditary papillary renal cell carcinoma, hereditary renal oncocytoma; Chronic kidney disease	Cigarette smoking; Obesity; Diet; Occupational exposure to asbestos	Avoid cigarette smoking; Maintain a healthy weight; Follow American Cancer Society guidelines on nutrition and physical activity; Avoid occupational exposures by using workplace safety precautions
<b>Lymphoma (Non-Hodgkin's lymphoma)</b>	Congenital immune deficiency diseases; Immune deficiency from organ transplantation and/or immunosuppression therapy; Infection with certain bacteria and viruses; Exposure to radiation	Immune deficiency from HIV infection	Use condoms to prevent HIV infection
<b>Leukemia</b>	Infection with HTLV-1 virus; Family history	Cigarette smoking; Exposure to benzene; High-dose radiation exposure; Inherited rare genetic diseases	Avoid cigarette smoking; Reduce exposure to benzene and radiation

## EARLY DETECTION

## SYMPTOMS

## TREATMENT

No screening examinations available other than to report signs or symptoms to health care professional

Headache; Nausea; Vomiting; Blurred vision; Epileptic seizures; Weakness of body part; Loss of hearing; Numbness; Impaired coordination; Difficulty in speech or walking; Personality changes

Surgery, radiation therapy, and/or chemotherapy depending on tumor location; Other drugs are available to alleviate symptoms related to brain or other nervous system tumors

Mammograms; Clinical breast examinations; Breast self-examinations (optional); see ACS guidelines for more detailed information

New lump or mass; Swelling; Skin irritation or dimpling, Nipple pain or nipple turning inward, Redness or scaliness of the nipple or breast skin; Breast discharge; Lump in the underarm area

Surgery (breast conserving therapy with radiation, or mastectomy with or without radiation); Plus chemotherapy and/or hormone therapy, depending on tumor size, spread to lymph nodes, and/or prognostic features

Pap test (smear) and pelvic examination; see ACS guidelines for more detailed information; HPV testing based on age (now approved by FDA - see ACS guidelines)

Unusual discharge from vagina other than monthly menstrual period; Bleeding after intercourse; Pain during intercourse

Surgery and/or radiation therapy; Plus chemotherapy for later stages.

Fecal occult blood test (FOBT); Flexible sigmoidoscopy; Colonoscopy; Barium enema; see ACS guidelines for more detailed information

Change in bowel habits; Feeling that bowel movement is necessary but no relief after doing so; Rectal bleeding or blood in stool; Cramping or abdominal pain; Weakness or fatigue

Surgery; Plus radiation therapy and/or chemotherapy for later stages

No screening examinations available for women without symptoms who are at average risk for endometrial cancer; Women should report warning signs to health care professional

Usual bleeding, spotting, or abnormal discharge, especially if after menopause; Pelvic pain or mass; Unexplained weight loss

Surgery; Plus radiation therapy, chemotherapy, or hormone therapy for later stages

No screening examinations available other than reporting signs and symptoms of disease to health care professional

Enlarged lymph nodes that have not gone away; Fever; Night sweats; Weight loss; Itching; Tiredness; Unexplained weight loss

Chemotherapy and/or radiation therapy; Bone marrow transplant for recurrent disease

No screening examinations recommended but routine urinalysis may find small amounts of blood in some people with early stages of cancer

Blood in the urine; Low back pain on one side; Abdominal mass or lump; Fatigue; Unintentional weight loss; Fever not associated with other infection; Edema

Surgery; Plus radiation therapy, chemotherapy, or immunotherapy, for later stages

No screening examinations available other than reporting signs and symptoms of disease to health care professional

Enlarged lymph nodes; Pain in stomach; Nausea; Reduced appetite if lymphoma of stomach; Swelling of head and arms if lymphoma of thymus or chest; Headache, trouble thinking, personality changes, and epileptic seizures if lymphoma of the brain; Unexplained weight loss; Fever; Profuse sweating particularly at night; Severe itchiness

Chemotherapy and/or radiation therapy; Plus stem cell transplant for advanced disease

No screening examinations available other than reporting signs and symptoms of disease to health care professional

Weakness; fatigue; Reduced exercise tolerance; Weight loss; Fever; Bone pain; Sense of fullness in abdomen

Chemotherapy; Plus stem cell transplant depending on prognostic factors; Gleevec (imatinib mesylate) for treatment of chronic myeloid leukemia

CANCER SITES	NON-MODIFIABLE RISK FACTORS	MODIFIABLE RISK FACTORS	RISK REDUCTION
<b>Lung and Bronchus</b>	Personal and family history	Cigarette smoking; Secondhand smoke from cigarette smoking; Asbestos exposure; Occupational exposure to some chemicals; Diet; Radon exposure	Avoid cigarette smoking; Avoid second-hand smoke; Avoid occupational exposure to asbestos and other chemicals by using workplace safety precautions; Eat five or more servings of fruits and vegetables per day; Get home checked for radon
<b>Melanoma of the skin</b>	Age (risk increases as one gets older); Moles; Fair skin; Freckling; Light hair; Family history; Immune suppression; Inherited condition known as xeroderma pigmentosum	Excessive, unprotected exposure to ultraviolet (UV) radiation through sunlight or tanning lamps; Severe, blistering sunburns during childhood and teenage years	Seek shade; Protect skin with shirt with long sleeves, long pants, and a hat with a broad brim; Use sunscreen; Wear sunglasses; Avoid tanning lamps
<b>Oral Cavity and oropharyngeal</b>	Age (risk increases as one gets older); Human papilloma virus (HPV) infection	Cigarette smoking; Smokeless or chewing tobacco; Cigars; Alcohol consumption; UV exposure for cancer of the lip; Vitamin A deficiency; Obesity	Avoid cigarette smoking; Limit intake of alcoholic beverages; Avoid exposure to ultraviolet radiation for cancer of the lip; Eat five or more servings of fruits and vegetables per day; Avoid obesity
<b>Ovary</b>	Age (risk is greatest in post-menopausal women); Early menstruation; Late menopause (after 50); Family history of ovarian cancer; Having breast cancer	No children; First child after age 30; Use of fertility drugs	Eating healthy diet based on American Cancer Society guidelines on nutrition and physical activity
<b>Pancreas</b>	Age (risk increases as one gets older); Diabetes mellitus; Chronic pancreatitis; Family history of disease	Cigarette smoking; Heavy exposure to pesticides, dyes, and chemicals related to gasoline; Obesity	Avoid cigarette smoking; Follow the American Cancer Society guidelines for nutrition and physical activity No screening examinations available other
<b>Prostate</b>	Age (risk is greatest after age 50); Race (risk is higher in African Americans); nationality (occurs more frequently in North America and northwest Europe); Family history	Diet high in saturated fat and red meat; Five or more servings of fruits and vegetables	Eating a healthy diet based on the American Cancer Society guidelines on nutrition; Clinical trials (SELECT) are underway to determine if selenium and vitamin E reduce prostate cancer risk
<b>Stomach</b>	Age (risk is greatest after age 50); Helicobacter pylori infection leading to chronic atrophic gastritis; Previous stomach surgery; Pernicious anemia; Hypertrophic gastropathy (Menetrier's disease); Type A blood; Family history; Stomach polyps	Diets which are high in smoked foods and salted fish, and contain pickled vegetables, and low in other vegetables; Cigarette smoking	Avoid diets high in smoked and pickled foods and salted meats and fish; Eat a diet high in fresh fruits and vegetables as recommended in the American Cancer Society guidelines on nutrition and physical activity; Avoid cigarette smoking
<b>Testis</b>	Age (most occur between ages of 15 and 40, but all men are at risk); Race and ethnicity (Risk is higher in Whites); Cryptorchidism (undescended testicle); Family history; Personal history of testicular cancer	None known at present	None known at present
<b>Urinary Bladder</b>	Age (risk increases as one gets older); Race (risk higher in Whites); Personal history of bladder cancer; Birth defects involving the bladder	Cigarette smoking; Industrial chemicals known as aromatic amines used by dye, rubber, leather, textile, paint, and printing companies; Chronic bladder inflammation such as urinary infections, kidney and bladder stones; Use of herb, Aristocholia Fangchi	Avoid cigarette smoking; Avoid occupational exposure to aromatic amines by using workplace safety precautions



## EARLY DETECTION

## SYMPTOMS

## TREATMENT

No widespread screening examinations available, but the National Lung Screening Trial (NLST) is underway to test the utility of spiral CT (computed tomography) scanning

A cough that does not go away; Chest pain often aggravated by deep breathing; Hoarseness; Weight loss and loss of appetite; Bloody or rust-colored sputum; Shortness of breath; Recurring infections such as bronchitis and pneumonia; New onset of wheezing

**Non-small cell:** Surgery; Plus radiation therapy and/or chemotherapy for later stages  
**Small-cell:** Chemotherapy; Plus radiation therapy, and sometimes surgery, depending on prognostic factors

Self examinations of skin; Skin examination conducted by health care professional

Changes in the appearance of moles: asymmetry (one half does not match other half), border irregularity (edges are ragged or notched), color (color is not uniform), and diameter (wider than 3 to 6 millimeters)

Surgery; Immunotherapy for later stages

Regular dental checkups that include examination of the entire mouth; A cancer-related checkup where primary care physicians examine mouth and throat; Self-examinations and if signs and symptoms of disease are present, then report them to health care professional

Sore in the mouth that does not heal; Pain in the mouth that does not go away; A persistent lump or thickening in the cheek; Persistent white or red patch on the gums, tongue, tonsil, or lining of the mouth; Sore throat or feeling that something is caught in the throat; Difficulty chewing or swallowing; Difficulty moving the jaw or tongue; Numbness of the tongue; Swelling of the jaw, Loosening of the teeth or pain around the teeth or jaw; Voice changes; A lump or mass in the neck; Unexplained weight loss

Surgery and/or radiation therapy; Plus chemotherapy for later stages

Annual pelvic exam; For women at higher risk, transvaginal sonography and blood tests for CA-125 may be conducted

Prolonged swelling of abdomen; Digestive problems including gas, Loss of appetite, bloating, or indigestion; Unusual vaginal bleeding; Pelvic pressure, Pelvic pain; Leg pain; Back pain

Surgery; Plus chemotherapy and sometimes radiation therapy for later stages

than reporting signs and symptoms of disease to health care professional

Jaundice; Abdominal pain; Weight loss; Digestive problems; Blood clots; Fatty tissue abnormalities; Diabetes mellitus

Surgery, radiation therapy, and/or chemotherapy depending on stage

Screening tests are available—prostate-specific antigen blood test (PSA) or digital rectal examination (DRE), but tests are underway to determine if they reduce prostate cancer mortality. See American Cancer Society guidelines for more information

Usually no symptoms with early stage disease; Advanced stage symptoms: Difficulty urinating; Frequent urination; Blood in urine; Impotence; Pain in pelvic bone, spine, hips, or ribs

Surgery, radiation therapy, hormone manipulation, or watchful waiting, depending on stage

Widespread screening not conducted in the United States due to low incidence rates; Consult medical professional about screening if at high risk for stomach cancer and report signs and symptoms to medical professional

Unintended weight loss and lack of appetite; Abdominal pain; Vague discomfort in the abdomen, usually above the navel; Sense of fullness in the upper abdomen after eating a small meal; Heartburn, indigestion, or ulcer-type symptoms; Nausea; Vomiting with or without blood; Swelling of the abdomen

Surgery; Plus chemotherapy and radiation therapy for later stages.

No screening examinations routinely recommended other than reporting signs and symptoms of disease to health care professional

Lump on testicle; Testicular enlargement or swelling; Sensation of heaviness or aching in the lower abdomen or scrotum; Lower back pain

Surgery; Plus radiation therapy and chemotherapy for later stages.

No screening examinations routinely recommended other than to report signs or symptoms to health care professional

Blood in the urine; Changes in bladder habits

Surgery; Plus radiation therapy, immunotherapy, and/or chemotherapy for later stages

# American Cancer Society, Hawai'i Pacific, Inc.

The American Cancer Society, founded in 1913, has more than three million friends and volunteers working nationwide to conquer cancer. In Hawai'i, eight American Cancer Society field offices provide a wide range of programs and services tailored to meet the unique needs of a community. While the challenge of cancer is clear, the actions taken by dedicated community members across the state bring us closer to achieving our mission of saving lives. Description of some of the Society's major programs follow.

## Research

The American Cancer Society National Research Program has funded close to \$2.5 billion in cancer research since the program was first launched in 1946. As the largest private, not-for-profit source of funding for scientists studying cancer, the American Cancer Society targets beginning researchers working in institutions throughout the country and directs research dollars into high priority projects. Researchers funded by the American Cancer Society have made outstanding contributions to what we now know about cancer. The success of the Society's program is exemplified by the fact that 32 Nobel Prize winners received grant support from the Society early in their careers.



In Hawai'i, the American Cancer Society is collaborating with the Cancer Research Center of Hawai'i in one of the most important preventive health trials to take place in our lifetime: The National Lung Screening Trial (NLST). The Society's specific commitment is to help ensure that the NLST reaches full

enrollment quickly by supporting promotional and outreach efforts in Hawai'i. The NLST is attempting to determine whether or not screening for lung cancer can reduce deaths. Lung cancer is the number one cause of cancer deaths in the world (See page 31 for additional information on the NLST).

## Advocacy

The American Cancer Society Action Network is a group of concerned volunteers who are informed about what they can do to become a part of the public policy process. The American Cancer Society has joined other community organizations to successfully pass legislation that will save lives. As an example, uninsured women diagnosed with breast or cervical cancer now have a treatment fund available through the Hawai'i Breast and Cervical Cancer Control Program. In addition, collaborative advocacy efforts led to the restaurant smoking ban recently implemented county by county throughout Hawai'i. Nationwide, Relay For Life Celebration on the Hill was another milestone in advocacy efforts. Fourteen Community Ambassadors from Hawai'i and Guam joined other American Cancer Society Ambassadors from all 50 states in Washington D.C. to carry the message of the need for increased funding for research to find a cure for cancer.

## Education

Volunteers in Hawai'i are working to diminish the threat posed by cancer. Through a wide variety of efforts, community leaders dedicate their time, knowledge, and compassion toward prevention, early detection, and improving the quality of life for people facing cancer. The Society's Tell A Friend Program is designed to remind women to get their annual mammograms. Since Relay For Life is experiencing phenomenal growth with more and more communities joining the fight against cancer, Relay For Life presented itself as a prime educational forum. Hawai'i was the pilot site for the Tell A Friend at Relay education and awareness program, which has now rapidly spread to other Relay For Life events throughout Hawai'i, Guam and the U.S. Achieving diversity is a priority for the Society. The Tell A Friend Program has also been designed to attract women in the Filipino community. With the full support of the Filipino Consulate, Tell A Friend trainings are being held throughout the state.





## Serving Cancer Patients and Their Families in Hawai'i

Cancer information is available 24 hours a day, seven days a week at **1-800-ACS-2345**, where cancer information specialists provide information in English, Spanish and other languages. Our Web site, [www.cancer.org](http://www.cancer.org), is an invaluable information resource. Many programs and services are available at unit offices throughout Hawai'i and Guam.

- Childhood Cancer Programs such as **Camp Anuenue** for children ages 7 to 17, **Families Can Sur Vive**, and **Ho'oulu Me Ka Ikaika** (grow with strength) event for young adults
- **Reach to Recovery** breast cancer patient visitation and support program
- **Fresh Start Tobacco Cessation Program** for pregnant women and parents who smoke
- **Look Good... Feel Better** program for women undergoing cancer treatment
- **Polyp Man** colorectal cancer awareness campaign
- **I Can Cope** cancer education and support program
- **The Great American Smokeout** tobacco cessation campaign
- **Angels on Wheels** patient transportation assistance
- **Generation Fit** nutrition and physical activity program
- **Man to Man** education and support program for men and their families dealing with prostate cancer

## There are eight American Cancer Society unit offices located in Hawai'i and Guam:

### Oahu:

Honolulu Office  
2370B Nuuanu Avenue  
Honolulu, Hawai'i 96817  
(808) 595-7544

Central/Leeward Office  
98-029 Hekaha Street, Bldg #5  
'Aiea, Hawai'i 96701  
(808) 486-8420

Windward Office  
130 Kailua Road, Suite 102B  
Kailua, Hawai'i 96734  
(808) 262-5124

Maui/Moloka'i/Lana'i  
Cameron Center  
95 Mahalani Street  
Honolulu, Hawai'i 96817  
(808) 244-5553

### Hawai'i:

West Hawai'i Office  
74-5588 R Pawai Place  
Kailua-Kona, Hawai'i 96740  
(808) 334-0442

East Hawai'i Office  
614 Kilauea Avenue  
Hilo, Hawai'i 96720  
(808) 935-9763

### Kaua'i:

Kaua'i Office  
Corner of Hardy and Umi  
Lihue, Hawai'i 96766  
(808) 245-2942

### Guam:

Guam Office  
P.O. Box 6562  
Tamuning, Guam 96931  
(671) 686-8815



# Cancer Research Center of Hawai'i, University of Hawai'i

The Cancer Research Center of Hawai'i (CRCH) is a university-based, National Cancer Institute-designated cancer center with a multidisciplinary environment spanning developmental therapeutics, molecular biology, epidemiology, behavioral sciences, and clinical investigations. Established by the University of Hawai'i Board of Regents as a freestanding independent institute in 1981, CRCH offers unique opportunities to study and influence Hawai'i's diverse and multiethnic populations with their disparate rates of cancer morbidity and mortality.

On July 1, 1996, the Center became an NCI-designated center and was awarded the Cancer Center Support Grant. Today, the CRCH continues to bring together researchers who focus on understanding the etiology of cancer and on reducing its impact on the people of Hawai'i. The CRCH provides leadership and focus in the following areas:

## Research Programs and Support

The CRCH conducts research on the causes, prevention, and treatment of cancer across a broad array of disciplines. Research areas include epidemiology, molecular carcinogenesis, cancer treatment, prevention methods, quality of life in cancer survivors, new therapeutic approaches to cancer treatment, and community-based interventions to promote cancer preventive lifestyles in Hawai'i's multiethnic population.

## Clinical Trials and Center Studies

Statewide cancer clinical treatment trials are administered through the Clinical Trials Unit of CRCH. In addition, CRCH researchers conduct many studies designed to reduce cancer



incidence in the general population. These trials represent state of the art new treatments that have the potential to advance our knowledge and improve the prevention and treatment of cancer.

## Research Training and Education

Training opportunities related to a broad array of cancer research are provided by CRCH faculty to trainees at a variety of educational levels ranging from high school students to practicing clinical oncologists.

## Public Information and Services

The CRCH serves as a focal point for public information to the State of Hawai'i on the latest in knowledge relating to cancer. As an NCI-designated Cancer Center, the CRCH operates the Hawai'i Cancer Information Service (CIS) and maintains close ties with other health organizations to assure that up to date information is available to the public and Hawai'i's clinical oncologists. Along with the Hawai'i Cancer Information Service, CRCH administers the Clinical Trials Program, Hawai'i Birth Defects Program, and the Hawai'i Tumor Registry. The Hawai'i Tumor Registry (HTR), one of the 18 National Cancer Institute/Surveillance, Epidemiology and End Results (NCI/SEER) regions nationwide, is a population based, multiple ascertainment source, active surveillance system serving all of Hawai'i. Descriptions of the Hawai'i Tumor Registry (HTR) and Cancer Information Service (CIS) follows.

## *What is a Clinical Trial and Why Are They Important?*

In cancer research, a clinical trial is a study conducted to evaluate new treatment or prevention methods. Each study is designed to answer scientific questions and to find new and safer ways to treat cancer patients. The search for good cancer treatment begins with basic research in laboratory and animal studies and, if successful, leads to research with patients.

Advances in medicine and science result from new ideas and approaches developed through research. Patients participating in clinical trials provide valuable information concerning the safety and effectiveness of new treatments or preventive strategies. New treatments are carefully studied first in the laboratory. If proven to be safe and effective, they are then made available to all patients.

Information about specific trials can be obtained by calling the American Cancer Society at 1-800-ACS-2345 or the National Cancer Institute's Cancer Information Service at 1-800-4-CANCER. Both organizations can also be reached through their websites at [www.cancer.org](http://www.cancer.org) or <http://cancertrials.nci.nih.gov>, respectively.



**T**he Hawai'i Tumor Registry (HTR) has several goals, chief among are the following:

- Determine cancer incidence and monitor cancer trends with respect to demographic and social characteristics of the population;
- Determine survival experience for cancer patients and monitor cancer survival trends with respect to form of cancer, extent of disease, therapy, and parameters of other prognostic importance;
- Identify cancer risk factors by conducting special studies which disclose groups with higher or lower cancer risks; and
- Identify factors related to patient survival through special studies of referral patterns, diagnostic procedures, treatment methods and other aspects of medical care.

## Central Statewide Collection of All Cancer Data

As one of the eighteen NCI/SEER regions nationwide, the HTR provides detailed information on almost 5,700 new Hawai'i cases of cancer (including in-situ) each year, while also collecting annual follow-up data on over 40,000 diagnosed Hawai'i patients. Patient follow-up continues throughout each individual's lifetime. Currently, the HTR database contains more than 127,000 cases diagnosed among Hawai'i's residents from 1960-2000, and serves as the basis for local and national presentations, publications, and hundreds of information disseminations annually. Detailed data can be secured by contacting the HTR. Names of patients, physicians and treatment facilities are not released. To ensure accuracy, strict quality control/assurance procedures have been established. These include review of collaborating hospital abstracts for accuracy and completeness by HTR and medical personnel. The HTR also participates in 2 SEER quality control audits each year, along with special NCI/SEER research studies.

## The National Cancer Institute's Cancer Information Service

The National Cancer Institute's (NCI) Cancer Information Service (CIS) is one of the nation's foremost sources for the latest and most accurate cancer information for patients and their families, the public, and health professionals. Since 1975 the CIS has been helping people become active participants in their own health care by translating cancer information into terms the public can easily understand. The CIS fulfills its mission by:

- providing access to cancer information, materials, and resources through NCI's toll-free telephone service (1-800-4-CANCER) and website (<http://cancer.gov>) which offers real-time online navigation assistance;

- providing information, resources and professional assistance to smokers who want to become and remain smoke free (1-877-44U-QUIT and [www.smokefree.gov](http://www.smokefree.gov));
- partnering with national, regional, and state organizations to reach medically underserved populations; and
- researching more effective ways to communicate with people about healthy lifestyles, health risks, and options for preventing, diagnosing, and treating cancer.

As one of 15 regional offices across the U.S., the CIS at the UH Cancer Research Center of Hawai'i focuses on the needs of medically underserved populations in Hawai'i and the U.S. Pacific Territories of American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands. Outreach to these audiences is coordinated and facilitated through the CIS Partnership Program, the core of the CIS Hawai'i program.

The CIS provides cancer information, training and technical assistance to organizations that have an established regional presence, are trusted within their communities, and are dedicated to serving minority and underserved populations. The Departments of Health in Hawai'i, American Samoa, Guam, and the CNMI, along with the American Cancer Society Hawai'i Pacific Inc. are among the many organizations with established CIS partnerships.

In collaboration with these organizations and others, the CIS develops audience appropriate cancer education programs focusing on breast and cervical cancer, clinical trials, tobacco control, and general cancer awareness. Among those programs of greatest significance and partner involvement include Hawai'i's Clinical Trials Education Initiative, a statewide initiative launched in 2002 to increase awareness of cancer clinical trials through promotion and education.

Together with the UH Cancer Research Center of Hawai'i, the CIS works to ensure that health professionals, partner organizations, and researchers have access to cancer information from the NCI, and the assistance they need to address the populations most affected in the region. The CIS applauds the dedication and efforts of organizations working in cancer control in Hawai'i and the U.S. Pacific, and welcomes opportunities for new partnerships in the years ahead.

For partnership assistance, call the Cancer Information Service at the UH Cancer Research Center of Hawai'i at 1-808-586-5853, or visit our website at <http://www.hawaii.edu/crch>. For cancer information call the Cancer Information Service at 1-800-4-CANCER, or visit the National Cancer Institute's website at <http://cancer.gov>





# Hawai'i Department of Health: Cancer Related Programs

## Chronic Disease Management and Control Branch

### Hawai'i Comprehensive Cancer Control Program

The Hawai'i Comprehensive Cancer Control Program is entering its second year of program planning. An "integrated and coordinated approach to reducing cancer incidence, morbidity, and mortality through prevention, early detection, treatment, rehabilitation, and palliation" are the essential components to the creation of an effective statewide cancer control plan (CDC, 2001). Hawai'i's Comprehensive Cancer Control Plan (CCCCP) or strategic plan will serve as a spring board for the creation of the state's action plan, which will ultimately prepare the state for CCCC implementation. The Department of Health, The Cancer Research Center of Hawai'i, and The American Cancer Society will continue their cancer control efforts by working as an integrated team with health care providers, community-based organizations, health insurers, and legislators. Stakeholders will work together to identify gaps in cancer services and ways to improve cancer care in the state, reducing the burden of cancer on Hawai'i's residents by adhering to the long-term vision of "No More Cancer," which will not only be a message of hope, but a measurable reality. Cancer affects the individual, *ohana* (family), and community, and does not discriminate.



## The Hawai'i Breast and Cervical Cancer Control Program

The Hawai'i Breast and Cervical Cancer Control Program (HBCCCCP) is funded via a cooperative agreement with the Centers for Disease Control and Prevention (CDC) as part of the National Breast and Cervical Cancer Early Detection Program (NBCCEDP)

Elements of the program include screening, tracking, and follow-up, quality assurance and improvement, surveillance, public and professional education, case management, and program evaluation. HBCCCCP provides breast and cervical cancer screening and diagnostic services to low-income, underinsured, or uninsured women aged 40-64. Nine providers throughout the state provide breast and cervical screening and diagnostic services to medically hard to reach women residing in each of Hawai'i's counties. Over 10,000 women have received breast and cervical screening and/or diagnostic exams through the HBCCCCP, and through this effort, 51 cases of breast cancer and 24 pre-cancerous cervical lesions have been detected as well as 2 cervical cancers. Hawai'i BCCCCP has established a centralized data system using cancer Screening and Tracking (CaST) software to collect, edit, and manage the data needed to track a woman's screening and diagnostic services as well as document initiation of treatment in the program.

## Hawai'i Tobacco Prevention and Education Program

Hawai'i's Tobacco Prevention and Education program (TPEP) consists of nine components, which fit together to create a comprehensive approach to state tobacco control efforts. Community programs to reduce tobacco use, chronic disease programs to reduce the burden of tobacco-related diseases, enforcement, and counter-marketing represent some of the major components within Hawai'i's comprehensive approach to tobacco control. Some of TPEP's major focus areas encompass reducing youth initiation to tobacco, eliminating public exposure to second-hand smoke, increasing smoking cessation opportunities in the state, improving surveillance data and program evaluation components, and reducing the non-health, social, and environmental consequences of tobacco use.





## The Nutrition and Physical Activity Section

The Nutrition and Physical Activity Section of the Chronic Disease Management and Control Branch at Hawai'i Department of Health promotes healthy eating and an active lifestyle as preventative measures to reducing the risk of acquiring chronic diseases such as cancer. The mission of the program is to improve the nutritional health of the people of Hawai'i through providing leadership in improving accessibility to, and acceptability of, quality nutrition and physical activity information, education and interventions. The program provides community and school-based preventive services, training and technical assistance and surveillance. (<http://www.state.hi.us/doh> 2003)

## Cancer-Related Data and Surveillance

The Office of Health Status Monitoring (OHSM) collects and analyzes data to assess the health status of Hawai'i's multi-ethnic population. State mortality data is compiled and provided to the Hawai'i Tumor Registry.

The Behavior Risk Factor Surveillance System (BRFSS) collects information on health risk behaviors of adult residents and monitors the prevalence of these behaviors over

time. The survey includes data on cancer screening, nutrition, and physical activity behaviors. The Youth Tobacco Survey (YTS) and the Youth Risk Behavior Survey (YRBS) are conducted in middle and high schools to monitor youth behavioral risk factors. Surveillance data is available as community profiles to inform state and communities on program planning.

## Healthy Hawai'i Initiative

The Healthy Hawai'i Initiative is funded by tobacco settlement dollars through legislative mandate and is a major, statewide effort to promote and support healthy lifestyles and environments to ultimately reduce the burden of chronic disease. The primary risk and protective factors of the initiative are nutrition, physical activity and tobacco. To change community norms and supportive environments for healthy lifestyles, the initiative has four major component areas: school based programs; community programs; public and professional education; and program evaluation. The goal of the initiative is to increase years of healthy life for all and to reduce existing health disparities among ethnic groups in Hawai'i.

## Environmental Health

The Environmental Health Administration of the State Department of Health responds to emergency events and investigates, assesses and advises on health risks of exposures to environmental hazards and chemicals.

## The Genetics Program

The Genetics Program administers grants, provides education, develops legislation, and provides coordination and oversight for genetics activities in the state. The Program develops and conducts education about general genetics and the genetics of common diseases including cancer, diabetes, and heart disease to health care providers, public health workers, consumers, and policy makers.

The Genetics Program is also involved in many research activities such as expanded newborn screening for metabolic disorders, breast, ovarian and colon cancer risk assessment counseling, and genetic counseling and evaluation for newborns and young children detected with hearing loss. The Program is expanding its activities to incorporate more education and model projects to demonstrate the benefit of incorporating genetics into routine clinical care.

(Listed in alphabetical order)

## American Cancer Society.

The American Cancer Society conducts epidemiology and surveillance research to evaluate trends in cancer incidence and mortality, cancer risk factors, and cancer patient care, and studies the causes and prevention of cancer in large prospective studies. In addition to *Cancer Facts & Figures*, the American Cancer Society provides descriptive cancer statistics in several other publications including *Cancer Statistics*, *Breast Cancer Facts & Figures*, and *Cancer Facts & Figures for African Americans*. Trends and patterns in cancer risk factors such as tobacco use, nutrition, and physical activity are presented in *Cancer Prevention & Early Detection Facts & Figures*. *Cancer Facts & Figures* serves as a resource for American Cancer Society Divisions to assess progress toward the Society's goals. The segment of the American Cancer Society collaborates with the National Cancer Institute, the Centers for Disease Control and Prevention, including the National Center for Health Statistics, and the North American Association of Central Cancer Registries to produce the annual Report to the Nation on progress related to cancer prevention and control in the United States.

## Behavioral Risk Factor Surveillance System (BRFSS).

The BRFSS is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP) and the U.S. states and territories. In Hawai'i, the BRFSS is administered by the Hawai'i Department of Health, Community Health Division. The survey is designed to provide state prevalence estimates on behavioral risk factors such as cigarette smoking, physical activity and cancer screening. Data are gathered through monthly, computer-assisted telephone interviews on adults aged 18 years or older living in households in a state or U.S. territory. The BRFSS is an annual survey and all 50 states, the District of Columbia and Puerto Rico have participated since 1996. The methods are generally comparable from state to state and from year to year, which allows states to monitor the effects in interventions over time. Prevalence estimates from BRFSS are subject to several limitations. The prevalence estimates are only applicable to adults living in households with a residential telephone line. Although 95 percent of U.S. households have telephones, the coverage varies throughout the U.S., ranging from 87 to 98 percent in the states.

## Census 2000/Hawai'i State Data Center.

The Census Bureau collects information on population and housing characteristics at the state level, as well as population and housing unit counts for cities, counties, and American

Indian and Alaska Native areas. Community leaders use the census for everything from planning schools and building roads to providing recreational opportunities and managing health care services. The mandate for conducting a census every 10 years comes from the U. S. Constitution. Detailed information is available that summarizes characteristics from every person and household in the United States by age, race, and family composition. Samples from households also provide user information such as income, education and occupation, as well as broader issues such as demographic trends and economic opportunities. The Hawai'i State Data Center is the coordinating agency between the U.S. Census Bureau and the state of Hawai'i. To assist in dissemination of information, the Hawai'i State Data Center, under the Department of Business, Economic Development and Tourism, publishes the *Hawai'i State Data Book*.

## Centers for Disease Control and Prevention.

The Centers for Disease Control and Prevention (CDC) is recognized as the lead federal agency for protecting the health and safety of people — at home and abroad, providing credible information to enhance health decisions, and promoting health through strong partnerships. CDC serves as the national focus for developing and applying disease prevention and control, environmental health, and health promotion and education activities designed to improve the health of the people of the United States. By working with public health and grassroots partners, and by leveraging the voices of the internet, and communication media, the CDC ensures the best health and safety information is accessible to the communities and people who need it every day. CDC, located in Atlanta, Georgia, U.S.A., is an agency of the Department of Health and Human Services. Data sources used for this report include *Chronic Disease Notes and Reports*.

## Hawai'i Tumor Registry at the Cancer Research Center of Hawai'i, University of Hawai'i.

The Hawai'i Tumor Registry (HTR), located in the Cancer Research Center of Hawai'i, University of Hawai'i, maintains a database of information on all cases of cancer diagnosed in the State of Hawai'i. It provides complete cancer reporting for the entire state and serves as a resource for nearly all epidemiologic cancer research and cancer control activities in Hawai'i. The HTR database contains more Native Hawaiians cases than any other registry nationwide. It also contains sizable numbers of Caucasian, Chinese, Filipino and Japanese cases, as well as smaller numbers of other ethnic groups (Korean, Samoan, etc.). This racially diverse database has been invaluable in demonstrating ethnic variations in cancer incidence and survival. Its use by hospitals and physicians who are interested in cancer statistics and by CRCH research



staff has resulted in numerous projects and publications in national professional journals. As one of the 18 NCI/SEER regions nationwide, HTR provides detailed information on more than 5,700 new Hawai'i cases of cancer (including in-situ) each year, while also collecting annual follow-up data on all diagnosed Hawai'i patients throughout their lifetimes.

## Surveillance, Epidemiology, and End Results.

The Surveillance, Epidemiology, and End Results (SEER) Program of the National Cancer Institute is the most authoritative source of information on cancer incidence and survival in the United States. According to a review by Hankey, Ries, and Edwards\*, the primary objectives of the SEER Program include: (1) developing and reporting estimates of cancer incidence and mortality, (2) monitoring cancer incidence trends to identify atypical changes in population subgroups, (3) reporting changes over time in diagnosis, treatment, and survival, and (4) encouraging studies focused on factors and determinants of length and quality of survival such as lifestyle choices, socioeconomic status, environment, early detection practices, and patterns of care that are amenable to cancer control efforts. Case ascertainment for SEER began on January 1, 1973. The SEER Program currently collects and publishes cancer incidence and survival data from 11 population-based cancer registries and three supplemental registries covering approximately 14 percent of the U.S. population. Expansion registries increase the coverage to approximately 26 percent. Information on more than 3 million in situ and invasive cancer cases is included in the SEER database, and approximately 170,000 new cases are accessioned each year within the SEER catchment areas. The SEER Registries routinely collect data on patient demographics, primary tumor site, morphology, stage at diagnosis, first course of treatment, and follow-up for vital status. The annual SEER publication, *Cancer Statistics Review*, includes cancer incidence, mortality, patient survival rates and other data by anatomical site. The SEER Program is the only comprehensive source of population-based information in the United States that includes stage of cancer at the time of diagnosis and survival rates within each stage. The mortality data reported by SEER are provided by the National Center for Health Statistics.

\* Hankey, BF, Ries, LA, and Edwards, K (1999). The Surveillance, Epidemiology, and End Results Program: A National Resource. *Cancer Epidemiology Biomarkers & Prevention* Vol. 8, 1117-1121, December 1999.

## Youth Risk Behavior Surveillance System (YRBSS).

The YRBSS is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). In Hawai'i the YRBSS is administered by the University of Hawai'i on behalf of the Hawai'i Department of Health. The survey is

designed to provide national, state, and local prevalence estimates on health risk behaviors, such as tobacco use, unhealthy dietary behaviors, physical inactivity and others, among youth and young adults who attend public and private high schools. Different statistical methods are used to choose the representative sample for the national, state and local prevalence estimates. Data are gathered through a self-administered questionnaire, which was completed during a required subject or class period. The YRBSS is a biennial survey, which began in 1991. The state and local surveys are of variable data quality and caution should be used in comparing data between them. Data from states and local areas with an overall response rate of 60 percent and appropriate documentation are considered weighted and are generalized to all public and private high school students in grades 9 to 12 in the respective jurisdiction. However, data from states and local areas without an overall response rate of 60 percent and inappropriate documentation are considered unweighted and are only applicable to students participating in the survey.

## Youth Tobacco Survey (YTS).

The YTS is a survey of the Centers for Disease Control and Prevention (CDC), National Center for Chronic Disease Prevention and Health Promotion (NCCDPHP). It was designed to assist states in developing and maintaining their state-based comprehensive tobacco prevention and control programs. The Youth Tobacco Surveillance and Evaluation System includes international, national, and state school-based surveys of middle school and high school students. The YTS is a biennial survey that supplements the YRBSS by providing more comprehensive data regarding tobacco and by providing information regarding both middle school and high school students. The YTS and YRBSS use identical sampling methodologies and the same wording for questions about tobacco use to enable states to use the high school data regarding tobacco use collected by both surveys. In Hawai'i, the YTS is administered by the University of Hawai'i on behalf of the Hawai'i Department of Health. The state YTS employs a two-stage cluster sample design to produce representative samples of students in middle schools (grades 6—8) and high schools (grades 9—12). Data are gathered through a self-administered questionnaire, which is completed during a required subject or class period. Data from Hawai'i high schools had an overall response rate of 60 percent and appropriate documentation and was considered weighted. Therefore responses are generalized to all public and private high school students in grades 9 to 12 in the respective jurisdiction. However, data for Hawai'i middle schools were not representative (overall response rates <60%) and therefore are not included in this report.

# Cancer Data Basics - Questions And Answers

## Where do reports of cancer cases come from?

Each time a person is diagnosed with a new tumor, the hospital(s) where that person is diagnosed and/or treated reports information about the person and tumor to the Hawai'i Tumor Registry (HTR) at the Cancer Research Center of Hawai'i, as required by law. The information required by the HTR is abstracted from each patient's medical record. Data about patients with cancer are also collected from radiation treatment centers, pathology laboratories, managed care organizations, death certificates and cancer registries in other states. It takes almost two years for all this information to be reported to the Hawai'i Tumor Registry and processed.

## In terms of the cancer burden, what do mortality, incidence, and staging data tell us?

Mortality (or cancer death) is related to use of early detection tests, stage of diagnosis, screening rates, and access to treatment. In general, the earlier cancer is diagnosed, the greater likelihood of successful treatment and survival.

Following the American Cancer Society early detection guidelines facilitates early diagnosis. Treatment, in turn, must be readily accessible. Barriers to quality treatment contribute to higher mortality. Incidence (or cases of new cancer) is related to the prevalence of risk factors. Behaviors such as tobacco use, poor diet and physical inactivity, excess exposure to sun, family history, exposure to certain chemicals, etc. can increase a person's risk of getting cancer.

## What is the difference between cancer counts and cancer rates?

The count is the actual number of new cases (incidence) or deaths (mortality). These actual numbers are used in a formula to determine rates. Rates express the number of new cases (incidence) or deaths (mortality) in a population during a given time period. For adults, rates are usually expressed as per 100,000 population.

## How do you decide whether to use cancer counts or cancer rates?

Rates are used when you want to make comparisons between states, counties, sexes, racial/ethnic groups, or cancer sites. Rates can also be used to look at trends over time. In Hawai'i, rates are not calculated when the number of new cases (incidence) or deaths (mortality) is equal to 20 or fewer in a given time period. Counts or estimates can be used when planning programs within a specific area. For example, looking at the actual number of new cases (incidence) and deaths (mortality) due to lung and bronchus, breast, prostate, colon and rectum and other cancers can help prioritize allocation of time and resources. Counts or estimates can also be used when rate data is not available. Counts cannot be used to make comparisons between states, counties, racial/ethnic groups, etc.

## If a patient lives in one county, but is treated for cancer in another county, for what county is the case reported?

It is reported for the patient's county of residence, regardless of where he/she is treated.

## Are cancer data available at the local level?

It depends on the population size. In areas with a small population, local data are not always available because either the number of cases is too few to report annual rates and/or patient confidentiality may be compromised if cases can be tracked to specific individuals. To overcome the limitation of small population size, multiple years/averages can be reported for a small area (i.e., 1995-2000 average) or small areas can be combined to report data regionally.





# Cancer Related Websites

## American Cancer Society (ACS)

1-800-ACS-2345 (1-800-227-2345)  
[www.cancer.org](http://www.cancer.org)

## American Cancer Society School Health Web site

[www.schoolhealth.info/](http://www.schoolhealth.info/)

## American Medical Association (AMA)

[www.ama-assn.org/](http://www.ama-assn.org/)

## Cancer Control Planet, National Cancer Institute (NCI)

<http://cancercontrolplanet.cancer.gov/>

## Cancer Information Service, National Cancer Institute (NCI)

<http://cis.nci.nih.gov/>

## Cancer Information Service of Hawai'i

<http://www.hawaii.edu/crch/cis>

## Cancer Research Center of Hawai'i, University of Hawai'i

[www.crch.org](http://www.crch.org)

## Centers for Disease Control and Prevention (CDC), Cancer Program

<http://www.cdc.gov/cancer/index.htm/>

## Centers for Disease Control and Prevention (CDC), Behavioral Risk Factor Surveillance System

[www.cdc.gov/brfss/](http://www.cdc.gov/brfss/)

## Commission on Cancer

[www.facs.org](http://www.facs.org)

## Fedstats (gateway to statistics from over 100 U.S. Federal agencies)

<http://www.fedstats.gov/>

## Hawai'i Department of Business, Economic Development, and Tourism

<http://hawaii.gov/dbet/stats>

## Hawai'i Department of Education

<http://doe.k12.hi.us/>

## Hawai'i Department of Health

<http://www.state.hi.us/doh/>

## Hawai'i Health Information Corporation

[www.hhic.org](http://www.hhic.org)

## Hawai'i Tumor Registry, Cancer Research Center of Hawai'i, University of Hawai'i

<http://www.planet-hawaii.com/htr/>

## Healthy Hawai'i Initiative, Hawai'i Department of Health

<http://www.healthyhawaii.com/index.html>

## Hawai'i Outcomes Institute, Healthy Hawai'i Initiative

<http://hawaiioutcomes.sharepoint.bcentral.com>

## Intercultural Cancer Council

[www.icc.bcm.tmc.edu/](http://www.icc.bcm.tmc.edu/)

## National Cancer Institute (NCI)

<http://cancer.gov/>

## National Center for Health Statistics, Centers for Disease Control and Prevention

<http://www.cdc.gov/nchs/>

## North American Association of Central Cancer Registries

<http://www.naaccr.org/>

## PubMed, National Center for Biotechnology Information, National Library of Medicine, National Institutes of Health

<http://www.ncbi.nlm.nih.gov>

## The Smoking Quitline, National Cancer Institute (NCI)

<http://www.smokefree.gov>



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